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ART REEVES
MOTION PICTURE EQUIPMENT
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HOLLYWOOD, CALIF. U.S.A.



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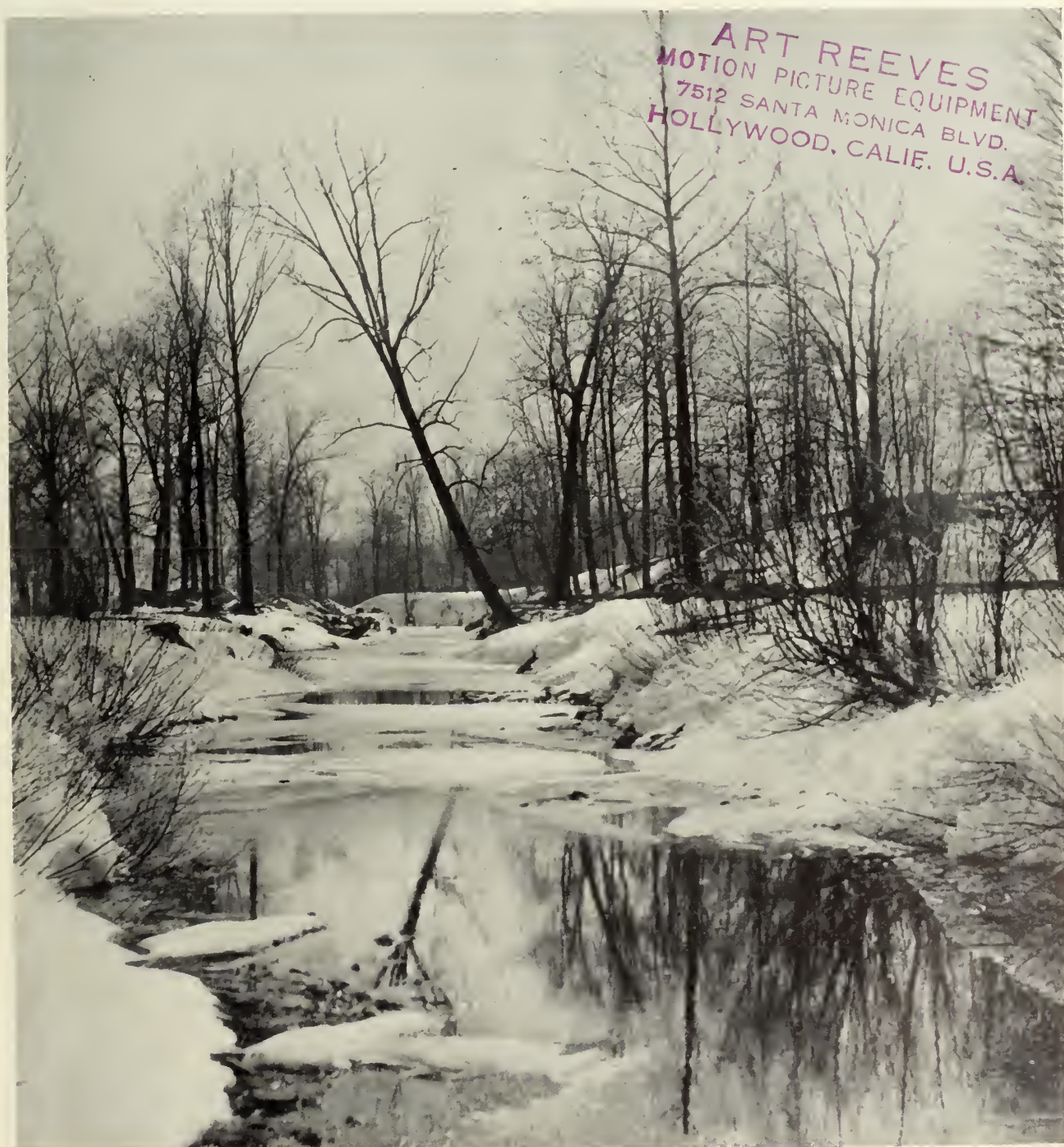
INTERNATIONAL PHOTOGRAPHER

—HOLLYWOOD—

FIFTH YEAR

JANUARY, 1936

VOL. 7
No. 12



ART REEVES
MOTION PICTURE EQUIPMENT
7512 SANTA MONICA BLVD.
HOLLYWOOD, CALIF. U.S.A.

BY CLARENCE H. GUTERMUTH—LOCAL 666

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Here our cameraman trapped this beautiful picture in the "good box," somewhere near Chicago. It is a typical shot of the New Year landscape worthy of any of our artist cameramen.

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Reindeer Have Nothing On This Dog Team



From the facile camera of Mr. Chalmer D. Sinkey, Chicago Daily News-Reel staff cameraman at Seattle. Scene shot in Rainier National Park. Yes, the dog team belongs to Mr. Sinkey and—it is Happy New Year.

INTERNATIONAL PHOTOGRAPHER

MOTION PICTURE ARTS AND CRAFTS

Vol. 7

HOLLYWOOD, JANUARY, 1936

No. 12

SILAS EDGAR SNYDER, *Editor-in-Chief*

EARL THEISEN and CHARLES FELSTEAD, *Associate Editors*

LEWIS W. PHYSIOC, FRED WESTERBERG, *Technical Editors*

HELEN BOYCE, *Business Manager*

A Monthly Publication Dedicated to the Advancement of Cinematography in All Its Branches; Professional and Amateur; Photography; Laboratory and Processing, Film Editing, Sound Recording, Projection, Pictorialists.

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In this issue The International Photographer presents three short articles on Television by request that the present status of this interesting subject be cleared up.

Allen Lawson, chief cameraman of the system of London states the English point of view; Harry Lubcke, well known to these columns, writes instructively on the subject, "Television", while Delmar A. Whitson, under the title "What Is Holding Up Television," sets forth the startling news that the machinery of commercial Television is already a fact and describes it in detail.

Motion picture cameramen, according to Jesse Lasky of the Pickford-Lasky Co. need not see in the present Television situation anything threatening to the craft, and there are others who even go so far as to believe that the coming of Television will be of great benefit to the cameramen.



REMEMBER!

The International Photographer is out to double its circulation during our New Year beginning February, 1936, and it will be more than worth its subscription price of \$2.50 to anybody interested in photography and cinematography. Its price in Canada and Foreign Countries is \$3.00. A year's subscription to this magazine would be welcomed by anyone with a hobby for the camera. Remember, the price is

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Three Color Process Announcement

By Henrik Sartov and Alfred Linstead of Hollywood

By SILVIO DEL SARTO



THE announcement of the perfection of a three color process of photography by Henrik Sartov and Alfred Linstead is an event in anybody's country, to say nothing of Hollywood itself, where even the Japanese house-boys are researching in color, three dimension photography, television, etc.

The sterling character of these well known men is amply sufficient to guarantee the integrity of their representations and, if other guarantees are required, the practical results already attained are available for examination.

It is not necessary herein to stress the importance of color pictures, printable on paper, to the motion picture industry. Everybody knows that color is attaining more and more prominence in the minds, not only of motion picture executives and artists, but also in the minds of the public generally. In other words, America is color conscious and this is manifested not only by the trend toward color productions, but likewise in every field of advertising, whether it be books, magazines or street signs and billboards.

The trend being toward color productions, it is evident that color stills must follow in their wake, because it is through still pictures that the productions are sold. Only color stills can properly describe pictorially the players, the beautiful sets, gowns and other natural colors that the director and cameramen see when the production is being photographed.

For years cameramen have been seeking some process in color that would enable them commercially to market their product. By that is meant that they have been seeking some commercially practical process for making three-color prints.

As far back as forty years ago they were able to make color prints, but only by a long drawn-out, intricate, complicated, commercially impractical and unprofitable process.

In the discovery of Sartov and Linstead there is now ready to be marketed a process that enables them to print three color pictures, which incidentally means all the colors of the spectrum and these three colors may be printed on any sort of paper, whether it be glossy or satin finish.

They are photographed with a camera that enables the photographer to make the pictures necessary instantaneously with this process. In fact the inventors' "stop motion" with it, as evidenced by a certain print taken of one of the owners of this process, wherein he is holding a smoking pipe in his hand and the smoke is stopped. In other words, with this process and camera, three color pictures, which mean, of course, all color pictures, can be photographed as conveniently as with the present day black and white still camera.

Let it be stressed that this process is not in its experimental stage, but is an accomplished fact, an achievement whereby, let it be repeated, a three-color photography capable of being instantaneously taken, printable on paper, reasonable in cost and, therefore, commercially practicable.

The results speak for themselves, any photographic cameraman or producer interested in viewing

these results may see them through the medium of this office.

Of the inventors and developers Henrik Sartov is known as having been one of the outstanding cameramen in the motion picture industry until the time of his retirement to devote his efforts to other interests. He entered the motion picture business through the suggestion and at the invitation of D. W. Griffith at which time he photographed Lillian Gish in "Orphans of the Storm." He also photographed Marion Davies, under contract to the Cosmopolitan Productions in "Quality Street", "La Boheme" and "The Scarlet Letter," very favorably compared by critics to the artistry of Rembrandt's paintings.

Mr. Sartov, while comparatively a young man, has been prominent in the photographic profession for a period of thirty-five years; entering it at a very early age and his work has been favored with international honors. He was the first to introduce portrait close-ups of soft quality to the motion picture industry and in doing so originated lenses of his own make. He also designed incandescent lights, which were for the first time used in the production of "Broken Blossoms" and that picture forever will be remembered for its marvelous close-ups. He was recognized as outstanding in his close-up lightings and is said to have commanded the highest salary up to that time which had been paid to any motion picture cameraman. In this he has unquestionably done much, not only to establish and maintain photography as a true art, but likewise has impressed upon the executives of the motion picture industry that the cameraman was entitled to a greater remuneration for his services than he had theretofore been receiving. Mr. Sartov was also one of the first to introduce panchromatic film to the motion picture industry and making thereon a complete production which was "La Boheme", with Lillian Gish. At the time of making this picture, Mr. Sartov prophesied the use of panchromatic film exclusively by the industry within a period of a year, which prophesy was fulfilled as we are aware.

Mr. Linstead has been actively engaged in the photographic profession for approximately thirty years. Some years ago, it will be remembered, he invented and developed an "etching process" which he sold and taught to the prominent photographers all over the country. He is recognized as one of the outstanding portrait men of this section and has done a number of notable things in the inventive field of photography.

Color has attained such prominence in recent months that this announcement will be considered almost as revolutionary to the industry as was sound and it is interesting to note that Mr. Sartov now prophesies that within a year color portraits and color prints will become as important to the industry as panchromatic did within the time he predicted. Unquestionably such a statement coming from a man of his known ability and artistry is entitled to very serious consideration.

It is also interesting to note that he now predicts within a year there will be more than twenty color

(Turn to Page 18)

The Archaeology of the Motion Picture

IN THREE PARTS—PART II

Prepared for the Encyclopedia International Institute of Educational Cinematography, League of Nations

By EARL THEISEN

Honorary Curator Motion Picture and Theatrical Arts, Los Angeles Museum

[Because of the pressure of other matters this article will be extended to Part III and Part IV, February and March, respectively.—Editor's Note.]

Slide-Shows and Phantasmagoria

The audience is leaning forward, tingling with fright. Amid a backstage clatter and a steady thump-thump, a devil on a smoky cloud is approaching. As he gets larger, the boldest of the audience become less bold and the timid ones look to the near-by exit. It is a new experience to them. It is magic! Yes, magic to them; but to us the medieval slide-show.

In the Slide-Shows of 1798-1835, which were known then as the "magic lantern performances," or "phantasmagoria," the audiences were held in a spell of terror while they were shown pictures of the devil, ghosts, monsters, or other subjects that would impress them or arouse their fears. A favorite illusion was having the devil with his trident approach the audience. A simulation of motion was obtained by the magic lantern operator slowly moving the lantern, in which, hand-painted on glass, was a transparency of the devil. The motion obtained was only a static movement of the entire picture on the screen, but because the audiences had heard much about the devil and very little about the magic lantern, they were tantalized with sincere doubts whether it might not be the real thing. Such was this antecedent of today's cinematic presentation.

It is popularly believed that the magic lantern was invented by Athanasius Kircher in 1640. Kircher called it the "Magia Catoptrica" or "Megaloscope." He described it as his invention in his book, "Ars Magna Lucis et Umbræ" (Great Art of Light and Shade), which was published in 1646. Even though Kircher is credited with this invention, it would appear that Cellini knew of it a century earlier, since, to quote from W. I. Chadwick's "The Magic Lantern Manual," published in 1886 as Number 19 of the Scoville Photo Series, "Cellini must have used some such instrument a century previous [to Kircher] to produce phantom figures in the smoke of fire." Since Daniello Barbaro in his book published in 1568 describes the use of a lens in conjunction with Camero Obscuro, it is entirely possible the Camero Obscuro could have been adapted to the lantern use credited to Cellini by the addition of a light. That, however, is a comment for the critical student, though it does indicate that the underlying principle of projection is well over three centuries old.

A Belgian physicist, Etienne Gaspard Robert (also known as Robertson), who had learned of the magic lantern from Van Estin of Maestricht, perfected the technique of the lantern shows through constant use over a great number of years. As a fad while still in school, he tried to invoke mystifying pictures of the devil by incantation and magic wizardry, but without success. He decided to create them himself. After reading outstanding works on magic and physics of

this time, he realized the desired effect could be obtained by the lantern. After a preamble, he would make the show room totally dark. Then, unknown to the audience, he would lower a screen, and in the midst of terrifying noises, claps of thunder and weird cries a ghost image would appear. He would increase the size of the apparition by moving his lantern, of which the audience was unaware. The "seances" that he gave at Paris in March and April, 1798, established his reputation as a magician. Lengthy articles in the press invested him with supernatural powers. He was a master in dressing his shows with the cunning of a perfect showman.

The lantern may be said to have come into vogue in England, and here it became something more than a device to frighten people. Henry Langdon Child, it is said by an authority, Will Day, inaugurated them as early as 1806. Child started his slide-shows as the "Phantasmagoria" at the Sanspareil Theatre, now the Adelphi, in London. Under his use the lantern attained a certain proficiency in story telling. Child knew of the authoritative manner in which a picture illustrates an idea.

With the beginning of his shows the lantern was heralded as an educational device. His lectures and stories covered all subjects. He facilitated the performance of the lantern with the addition of a "dissolver." This "dissolver" was used on his Bi-Unial Lantern, which was one that had two optical systems, or in other words it could project two pictures at once. The two objectives with slide holders were side by side on the same lamp house. The "dissolver" was in the form of a rocker arm that extended across the front of the two slide holders. With this system such elaborate themes as "The Orphan's Dream" could be presented. In this picture, which was in essence a motion picture, a slide picture of the "little orphan" was first shown asleep on a couch; this was known as the "foundation image." A second slide with a picture of angels in a bank of dream clouds would be made to appear from the other optical unit. The super-imposing of the two slides presented a pleasing theme—an orphan dreaming she was with angels in heaven.

Comedy was obtained from such slide-show sub-

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By EARL THEISEN, Associate Editor

jects as "The Boy and Cat." The first slide showed the boy holding the cat by the tail over a tub of what was evidently water. The comedy was in the climaxing second slide, which showed him dousing the cat. They did not show a third slide of the boy getting scratched, thereby overlooking the moral.

Another popular theme was "Proving the Rotundity of the World." The method of doing this was to project a slide picture of the world. A second slide with a picture of a ship so placed that it coincided with the outer circumference of the world was made to revolve by means of a small gear. The Chromotrope, another invention credited to Child, was very popular. It consisted of two slides. Each had a spiral design in color. When the two were revolved while in the lantern, a kaleidoscope of color in an ever-varying pattern was the result.

Probably the most elaborate of these slide-shows was the "Siege of Delhi," which was given at the Royal Polytechnic Institution in England. Six lanterns were used and the field of battle with its bursting of shells, fire of artillery, accompanied by suitable sound effects, made it a dramatic show.

The first of the "travel slides" was brought together by Richard Vaughan Yates of Liverpool some time prior to 1837. He made a tour of the Holy Land and then had noted artists paint transparencies of the interesting points. (A transparency was a term used to designate a transparent painting in color on

glass as used in the lantern slides. The hand-painted slide was eliminated as photographic methods were perfected.) John Smith, one of the editors of the "Liverpool Mercury," became so enthused over the Yates travel slides that he arranged an extensive lecture course on geography which was delivered in all the principal English towns.⁷

With the exception of the lecture tours and educational demonstration, the slide-shows were generally put aside when the motion picture was finally made possible; but until then it was a popular form of entertainment for the class of people who were later the motion picture fans. Even after the "pictures that moved" were shown, the slides were used as a means of announcing program changes and for advertising. As an advertising medium during the "nickelodeon," or five-cent admission period, of the film theatres, it seems that every merchant within a radius of miles had a slide that he wanted on the screen between the "pictures."

The illustrated song slide of this same period must be mentioned. All the popular song hits were made into elaborately colored slides which were thrown on the screen to be sung by the audience, accompanied by a rather worn piano and pianist down near the screen. The song slides and advertisements continued, particularly in the provincial districts, until the advent of the sound film. (Part III will appear in February 1936.)

Capt. Herford Tynes Cowling Joins National Archive Service at Washington



Mr. R. D. W. Connor, Archivist of the United States, announces the appointment of Captain Herford Tynes Cowling to be Technical Assistant, Division of Motion Pictures and Sound Recording, the National Archives.

Since July 1st of the present year, Capt. Cowling has been with The National Archives in connection with a survey of Government historical motion picture films. Capt. Cowling is a native of Suffolk, Nansemond County, Virginia. Two years at George Washington University. From 1909

to 1916 was photographer and chief photographer with the U. S. Reclamation Service, traveling extensively throughout the United States filming reclamation projects, Indian life on reservations, and national parks; was selected by the late Franklin K. Lane to inaugurate a pictorial "See America First" film program for the United States.

For seven years was with the Burton Holmes Paramount Pictures, Inc., as Technical Director and Producer, which took him to many countries in Europe, Asia and Africa. In 1922 Cowling was managing director of a new production company, headed an expedition to Central Africa, producing films of life and customs of native tribes and several big game hunting expeditions.

Continuing his work in foreign fields, in 1923 he headed a special expedition in Western Tibet, making the first films of Tibetan people and customs.

In 1926 he made a trip to Kashmir, India, with a commission from the Government to film the Durbar at the coronation of the Maharaja of Kashmir for the Government Archives.

In 1927 Capt. Cowling was selected by George Eastman as technical director for the Eastman Teaching Films Program which produced a series of educational motion picture films for use in American schools. This was discontinued in 1932, owing to the death of the sponsor, Mr. Eastman. This program involved the expenditure of over \$2,000,000.

On duty as reserve officer in the Signal Corps, Photographic Section of the U. S. Army, War College, Washington, D. C., October, 1934, to July 1, 1935, in connection with the preservation of World War historical film records.

Cowling, motion picture engineer, producer, director and explorer, is probably better acquainted with the motion picture film and photographic archives of the United States Government than any other one person.

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Is This The Answer?

"What Is Holding Up Television?"

A Fool Proof Invention

By DELMAR A. WHITSON

"What is holding up television?"

This remark is heard on all sides, today, and is practically replacing the classical weather subject as a topic of universal interest. However, unlike a remark attributed to Mark Twain: "Everybody talks about the weather, but nobody does anything about it," it seems that everybody of any scientific importance has been, or is working on it, and the practical instrument is said to be a near reality.

In the meantime the patient public has divided itself into two general divisions of opinion, i.e. that, either the large electrical companies are holding out on them because of some commercial policy, or that they have found it to be a scientific "joker" and the public is left to be weaned of its expectations by fiction writers. However encouragement is maintained by the announcement from time to time that, this or that big electrical combine is to erect immediately elaborate television stations, involving large New Deal sums, meaning, of course, that the saving in admission for the Saturday foot-ball game will soon be applied to the payments on the home television set. And, adding to the anxiety, the spot-light inventors are busy hastening from coast to coast explaining to Sunday magazine reporters a bagful of reconditioned television fossils which will very soon ruin the movies.

However, a confidential peep behind the scenes reveals the important fact that we have a house divided against itself, on the part of the inventors working in the field. One class champion the Nipkow revolving disc scanner and its modified rotating lenses and prisms and the other class choose their corner on the cathode ray scanner.

The cathode ray inventor claims that the problem of synchronization is successfully solved by his inertialess, weightless stream of scanning electrons, as against the leading and lagging of his opponents' revolving scanning system, which cannot be made to keep in step for high quality vision.

The cathode ray inventor is vigorously met by his opponents' criticism that the cost of the cathode ray tube, in view of its short life, places too high a premium on the operating cost from the standpoint of the average pocketbook, and is also discouragingly limited to a small image, in the neighborhood of several inches, while his wares in turn are enchained by a much greater image, several feet, in fact, and a low operating cost.

While both systems have their offsetting merits, they are each admittedly affected by what seems to be a defeating element peculiar to their respective scanners, and, as a consequence, have been unable to graduate from the laboratory.

Food for thought may be found in the fact that the television inventors have apparently fallen into the same hypnosis which impelled our automobile

body manufacturers to copy the horse drawn carriage for the greatest number of years and, likewise, our radio manufacturers to repeat the same idiosyncrasy, by copying "His Master's Voice" type of horn, for quite a number of years, despite the fact that the phonograph people were greatly advanced in cabinet design when broadcasting was at first commercially introduced.

The present system of television, **excepting the amplifiers**, that is, the scanners, are fossils of early television schemes. Nipkow invented the Revolving Disc in the latter part of the nineteenth century, and Prof. Rosing proposed and actually used the Braun tube or cathode ray scanner about 1910 or 1911 and, with all our modern electronic technique, we are still laboring with these outmoded hangovers.

However, it is the growing conviction of a large number of recognized scientists, that the real answer to the problem will be found in a **new principle or a new result from an old principle not yet applied to television**. Such was the parallel state of quandary in the radio art. then called wireless, when, by an inspiration Dr. Lee De Forest introduced a simple grid shaped wire into what is known as the Fleming Valve and, Presto! . . . wireless was reborn and swept the world as radio!

In view of the conviction that history repeats itself it is not thought passing strange that Dr. De Forest should appear again at this stymied period, with what is undoubtedly the key to practical television, but this time it is as god-father. It was the writer's good fortune to be invited by the Doctor to inspect in his laboratory a scanning system regarding which he stated: **"Will sweep the country with the same degree of success that attended the original reception of radio broadcasting in the early twenties."**

Such a statement, coming from a recognized world pioneer in electronics, was rather startling, although incredulous.

The invitation was accepted, with the result that the readers of this article have the opportunity to ponder for themselves the prediction of Dr. De Forest, whose accurate scientific prognostications are historic.

The Doctor predicated the essentials of successful

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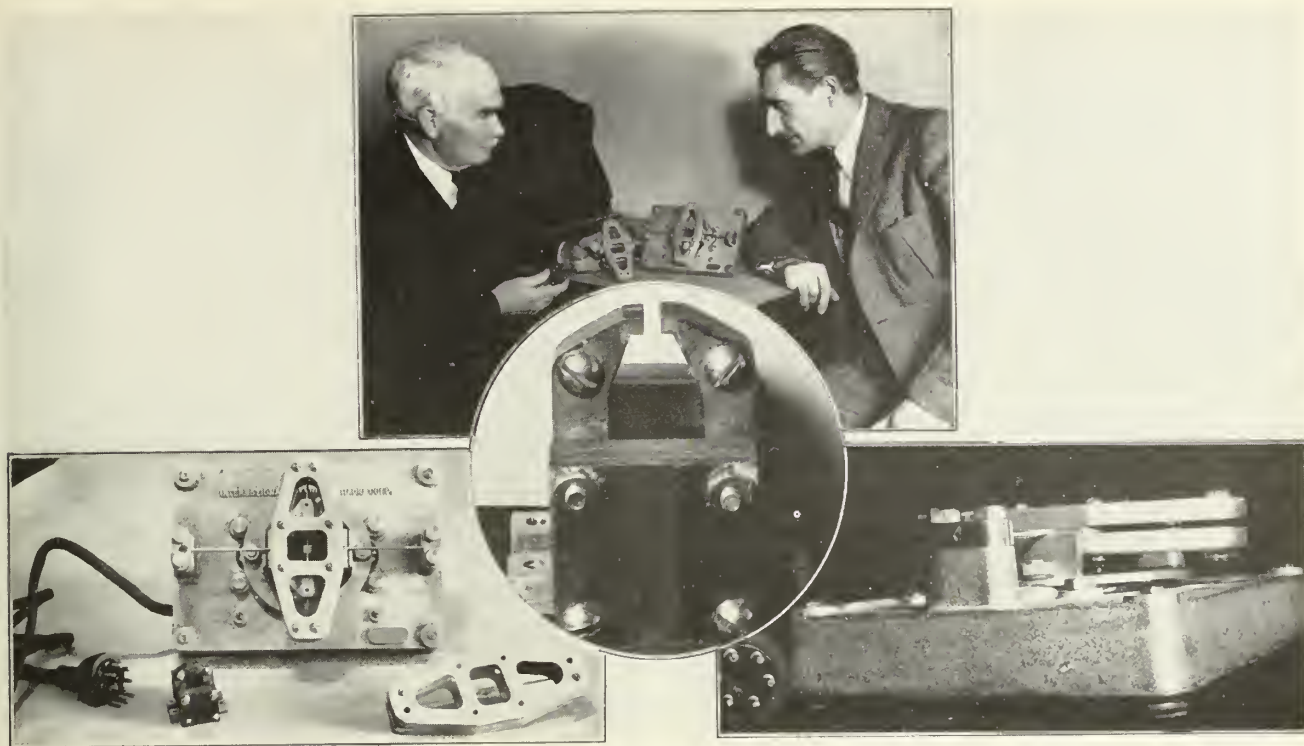
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Upper: Dr. Lee De Forest, famous radio engineer and inventor, explaining to the author the Priess Television Scanning Unit. Some idea of size may be obtained by comparing scanner with the size of Dr. De Forest's hand. Left: The Priess Television Scanning Unit. Center: Assembly view showing crossed wire oscillating system and mirror at exact center. Lower left: Electro magnet for producing torsional oscillation of wires and is mounted beneath oval shape frame in center of unit. Right: Oscillating frame supporting mirror. Center: Control block: Electro Magnet for imparting torsional vibration to wire. The small arm or armature mounted on back of mirror on wire extends into the airgap shown at top. Right: Side view of scanner showing suspension of scanning frame.

television on several vital points:

"First, it must be fool-proof; that is, it must not exceed the present simplicity of operation of the standard radio set.

"Second, it must have clear definition and be capable of being witnessed by at least a roomful of people, or on a par with the latest 16 mm. film projection.

"Third, it must be within reach of the average pocketbook, and with no more upkeep cost than the present set."

Having outlined these requirements, Doctor De Forest then drew attention to the actual machine which was to qualify under these rather unmistakable counts, and prefaced his explanation by highly complimenting the inventor who is responsible for this epochal invention.

This is William H. Priess, of New York City, who is a brilliant scientist and well known in the U. S. Patent Office for his important inventions.

He is also renowned in the electrical fraternity for his valued contributions and, if Dr. De Forest is correct in his estimate, Mr. Priess will, with the public introduction of his invention, be added to the world's immortals.

The scanning unit is completely disarming in its simplicity of construction and one immediately recognizes in it these earmarks of all genuine solutions, which invariably invoke the remark: "Why didn't someone think of that before?"

Doctor De Forest stated: "It makes use of the torsional properties of a steel wire, somewhat after the old and well known principle of the galvanometer, except in this case two wires of unequal length are employed and crossed at right angles." He indicated where a small $\frac{1}{4}$ - by $\frac{1}{4}$ inch metal mirror was welded at the center of the shorter wire

and had a small iron vane or arm projecting from the back side of the mirror and extending into an air-gap between the poles of an electro magnet. The Doctor interrupted the inspection at this point to explain what occurs here in practical operation. "This electro magnet," he explained, "produces an alternating magnet field of 1500 cycles per second, which moves this arm to and fro as many times, producing an oscillating motion to the mirror around the axis of the wire. This alternate rocking of the mirror is sufficient to completely sweep a bright spot of reflected light upon a screen measuring from two to six feet in an optional size area. The wire, of course, only sweeps the mirrored spot on the horizontal, or in other words is to form just the lines."

The Doctor then continued his explanation of each part by pointing out that this wire upon which the mirror and vane are welded, is anchored at each extremity upon an oval shaped channel framework of aluminum, measuring about two by four inches in area, and one-half inch thick, and weighing but a few ounces. This wire is aligned in the direction of the length of the framework and the framework, in turn, is suspended at its exact mid-section by a wire extending out at each side, not unlike a pair of oars in a small boat. These wires are fastened at their outer extremity at the top of a pair of upright metal standards mounted upon the final base. This arrangement of mounting produces a balanced unit or framework which may be rocked like a walking beam or like a simple see-saw. Doctor De Forest paused here to explain that when the device is in operation this framework assembly is alternately rocked by the larger electro-magnet underneath at the rate of 24 vibrations per second, giving a verticle displacement to the reflected spot after each horizontal sweep.

He laid particular stress upon the fact that neither

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Printing Paper

Miniature Camera Photography

Lens Speeds

PRINTING PAPERS: We still occasionally encounter the amateur who is making an attempt to try every type of printing paper the market offers. The amount of different papers is considerable, giving the photographer much leeway in jumping from one type to the other. If such practice is engaged in one cannot expect to produce good prints.

At the start the photographer should select a brand of enlarging paper which can be had in different contrasts, as hard, medium and soft. This will enable him to have a correct type of paper for each negative. Many papers are offered in but a single grade of contrast. In such cases it is really necessary to develop the negative in a manner to suit the printing paper. Such procedure is relatively simple with large negatives, as $3\frac{1}{4} \times 4\frac{1}{4}$, 4×5 , etc., plates or cut film, etc. Negatives of such size can be developed singly to obtain the correct contrast for the best results with a particular type of paper.

The miniature camera photographer is, however, confronted with a different problem. He has many negatives on a single roll of film; in many cases such negatives having been exposed under varying conditions and consisting of widely different subjects. The entire roll of film is developed for the same time in the same developing solution, so that negatives of different contrasts usually result, necessitating the use of paper of different grades to obtain good prints.

Then again papers are offered in quite a variety of surfaces—another temptation for the beginner. It would be best at the start to choose one of the more popular surfaces, as semi-rough or rough matte. In most cases such types of papers are obtainable in a larger number of grades than the special surfaces as linen, porcelain, stipple, etc.

Once a single type of paper has been selected it would be advisable for the photographer to work with this paper until he is able to obtain good prints with it. In many instances the reason for failure to make an acceptable print is poor judgment in selecting the proper grade of paper for the negative. For experience it would be advisable for the beginner to pick about three or four negatives of varying contrasts and make a set of prints from each negative, on each grade of paper. This will be a guide to him in selecting the proper grade of paper to suit the negative. After this step has been mastered it will be simple for the photographer to indulge in different paper surfaces and obtain excellent prints with them.

Another step upon which the amateur trips, though simple and often repeated in these columns, is the correct exposure and development of the paper.

In many instances where flat, lifeless prints are encountered, it will be found that the paper is over-exposed—the image comes up very quickly in the developer, and it is necessary to pull it out of the latter to prevent the print from becoming burned up.

Generally the exposure should be such that the paper will require from $1\frac{1}{2}$ to 2 minutes develop-

ment time. In this manner—giving the paper a short exposure and full development, the print will have more snap and brilliance.

Another bit of advice for the beginner is that he should not intend to make about two or three dozen prints in a single night, but be contented with four or five good ones. Care and time should be taken with each negative; test strips made to determine the exposure and developing times to obtain the best results. Each negative to be printed should be examined for small particles of dust or dirt, and these removed with a suitable expedient. This will obviate much subsequent spotting. Care and thought expended in this fashion will reveal itself in better prints.

Quick Drying: In many cases in order to dry the prints faster, photographers submit the ferrotype tins with the prints on them to high temperatures. Glossy prints which have been dried at too high a temperature without sufficient circulation of air will not have a high gloss, and in some cases will have a "ground glass" effect. The excessive heat may also affect the black japan surface, causing check markings. In some cases the shape of the print will show on the tin after the latter has been removed. At times these may be removed by placing the tin in hot water or near a steam pipe for a few minutes. The oft repeated advice, "haste makes waste," is quite applicable in this case.

Winter Exposures: Because snow is white, reflecting a relatively large amount of light, it is the supposition of many photographers that snow scenes require short exposures. Such a fact may be true when we are photographing scenes containing a large expanse of snow. The same procedure cannot be followed when foreground objects are the center of interest. In this case exposure should be judged for the objects. If an exposure meter is used the photographer should take the reading close to the object so that the field covered by the meter will not include the snow in the background. In such cases it is well to keep the old photographic axiom in mind, "Expose for the shadows and let the high-lights take care of themselves," the objects in this case representing the shadows and the snow the highlights.

Filters and Contrasts: Many of the films employed in miniature camera photography, especially those of the extreme fine grain type, are prone to produce contrasty results. Such films are usually developed for less time than normal, to obtain normal contrast.

In outdoor pictorial work contrast can be additionally softened through the use of filters. Despite

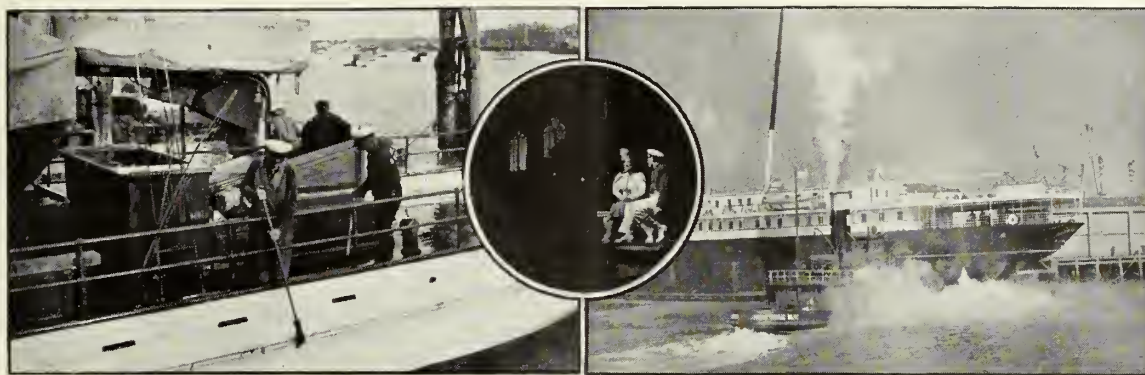
MOVIOLA FILM VIEWING and
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By AUGUSTUS WOLFMAN

the fact that a panchromatic film may be employed, such films are still greatly sensitive to blue, and without the use of a filter the sky will be rendered too light. Greens are also generally reproduced too dark. When a yellow filter is employed the blue of the sky will be held back, and the latter will reproduce in a definite tone. Greens will reproduce lighter, resulting in less contrast. Especially in brilliant sunshine, in which case strong contrasts are prone

fully exposed negatives than the other. This may be quite true. We may have two f:3.5 lenses of different construction, and when both are used wide open the results obtained relative to exposure will not be the same.

The entire matter concerns itself with the manner of determining the numbers denoting the speed value of a lens. It is obtained by dividing the diameter of the largest diaphragm opening into the focal length.



Left: Spring Cleaning, photo by A. Wolfman. Center: taken with a Summar f:2 lens wide open, on DuPont Superior film. Right, Waterfront, by Karl A. Barleben, Jr., F.R.P.S.

to exist, the use of filters will do much to eliminate harsh results.

Formula for Supersensitive Panchromatic Film:

Many amateurs still seem to experience dire results with supersensitive panchromatic films in relation to grain. There are many instances where the illumination is relatively weak, despite the fact that a supersensitive film and a fast lens are employed, as in night photography. In such cases the use of a developer containing metol is advisable, to bring out the shadow detail, extreme fine grain being sacrificed for the proper shadow values.

However, there may be cases where sufficient illumination is present, allowing the use of an extremely fine grain developing solution. The Sease No. 3 formula is excellent, but many photographers object to the doubling of exposure necessitated by this developer. An excellent fine grain formula for supersensitive panchromatic films has been reproduced in these pages some time ago, however, for the benefit of those who are not acquainted with it, we are listing this formula below. This formula requires only normal exposure.

Formula for Supersensitive Pan Films:

Paraphenylene-diamine	6 grams
Glycin	6 grams
Sodium sulphite (dry).....	37.5 grams
Water, to make.....	500 c.c.

The formula is prepared by dissolving a portion of the sodium sulphite in about 250 c.c. hot water; the paraphenylene-diamine is dissolved, then the glycin and the remainder of the sulphite, and cold water added to make 500 c.c.

The developing times are: 30 minutes at 65°F., and 25 minutes at 70°F.

Lens Speeds: Often we have heard from photographers that they have worked with two different lenses, both of the same relative speed, and using the same shutter speed, the exposures on the film not being the same. One lens will produce more

However, due to variances in design or construction of lenses some may actually transmit more light than others, despite the fact that their speeds are the same, as determined in the manner stated above. Usually the differences are so small that the latitude of the film will amply take care of them.

Straightening Film: This is the time of the year when many of the films made during the past summer season are being printed. Usually the photographer keeps his negatives curled up in the original roll, and if they have been kept in a warm dry place the rolls of film will have curled up to a considerable extent, especially in the case of cine film. In many cases the curled film hampers the photographer in enlarging. This condition can be remedied by rolling the film in the opposite direction of the curl, placing a rubber band around it, and then putting the film in a warm place, such as near a radiator, for an hour or two.

A Hint: By adding a small amount of sodium chloride (ordinary table salt) to a normal MQ paper developer, prints with more brilliance and of a colder tone will be produced.

The Last Word

In Sound Recording

THE NEW PRINCIPLE MINOR QUARTZ OPTICAL UNIT

becomes an integral part of your sound recorder—this unit is cemented into a steel block—it focuses a beam of light of great intensity and actinic value a distance away and on the film, which PROVIDES CLEARANCE and PREVENTS SCRATCHING of the sound track. The width of the beam of light measures from .0005" to .0008" as it strikes the moving film.

This Quartz Optical Unit was used for the sound effects in the recent production of the "Tarzan" picture, filmed in Guatemala and referred to in the March issue of International Photographer.

Send for details and specimen of sound track.

C. C. MINOR

1835 Whitley Avenue

Phone: GR. 4781

Hollywood

"Japan—Center of World's Film Distribution"

By H. A. MIMURA,

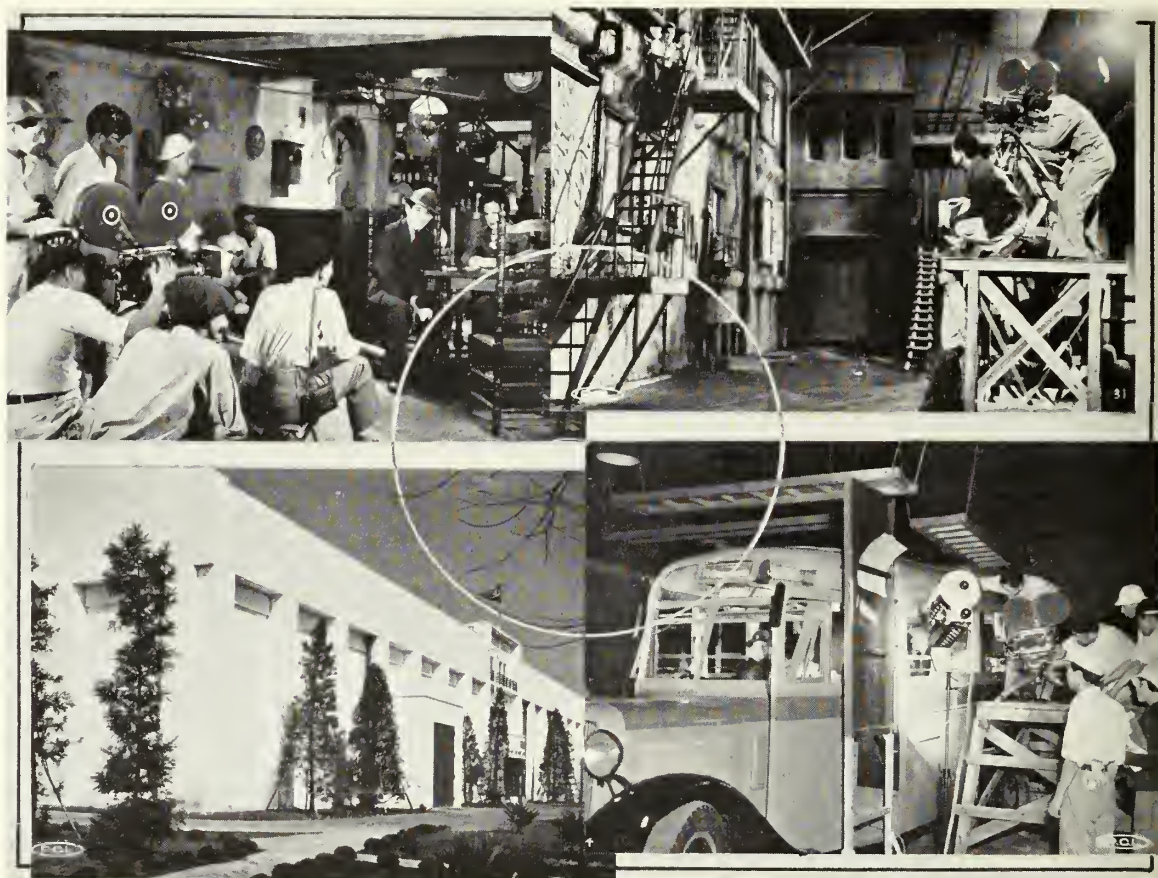
Member of Local 659, Who Received His Cinematographic Education in the Hollywood Motion Picture Studios

THOUGH the entire country itself is smaller than the State of California, the Japanese as a whole are among the most ardent film fans. Together with our own produced features of over 500 a year, we have about the equal number of foreign made pictures. Most theaters are distinguished for their policies to show either home-made pictures or foreign films. In comparison, the American pictures at one time occupied the greater part of the Japanese market, while European films followed in smaller scales. However, the present

Myrna Loy, William Powell, Clark Gable, Franchot Tone, James Cagney, Grace Moore, Miriam Hopkins and Gary Cooper are still well-known to the Japanese movie fans.

While such imported films are drawing some business, we are making our own in the studios, more than ten in number. With the exception of only one, the rest of the studios are all using their own system, making talkies, sound pictures and some are still making silents.

The studio that I am connected with is located about ten



Upper left: Shooting a bar scene. Director Kimura in front of the camera; Harry Mimura looking through the finder. Lower Left: Nos. 1 and 2 stages of P. C. L. Studio. Talkie recording rooms are located on the third floor in the center of the stages. Upper right: Love scene on fire escape. Harry Mimura at camera. Lower right: Screen process shot from Harry Mimura's recent picture, "Seven thirty O'clock," a mystery story of a modern city.

year shows an amazing increase in European-made pictures—all trying to wedge into the Nippon market. Now we see films from England, France, Germany, Italy, Switzerland, Russia, Austria-Hungary, Poland, Czechoslovakia and others. Titles are superimposed to make the audience understand. Another process of showing foreign film was recently attempted by Paramount on their old film, "Feet First," Harold Lloyd's picture, in which all the English dialogues were taken off and in its place, Japanese actors and actresses spoke in Japanese. This picture was shown on the screen immediately after its completion and the great hit that it made is something worthwhile speaking about. Seeing the good box-office result, Paramount is making two more pictures in the same manner.

The pictures which made a clean hit on the screen within a year were "The Lives of a Bengal Lancer," "It Happened One Night," "Manhattan Melodrama," "Talk of the Town," and "Unfinished Symphony" (a German picture). The name of Robert Riskin, of Columbia scenario department, is so famous among fans that his name is printed in every advertisement, which draws more people. Shirley Temple is the topnotcher in fame.

miles from the heart of Tokyo. P.C.L. Studio is the name. It is not the abbreviation of PenCil, but stands for Photo Chemical Laboratory, which is the origin of this organization. It is one of the well equipped studios in Japan, with every bit of machinery made in Japan except cameras. Two new Mitchell sound cameras, one silent Mitchell, two Parvos, Eyemos and other cameras are the only ones bought from abroad. At present we have four units making pictures, two at a time; however, short subject staffs are working along with feature productions. Six cameramen and eighteen assistants are under long term contract and each cameraman has four assistants when making pictures. Each cameraman is scheduled to shoot four pictures a year and rest between pictures with full monthly salary. Since we commenced using the new Mitchell we avoid the clumsy "Blimp," and it gives more pleasure for the cameraman than anything else. Our studio is the only one in Japan using this super-machine.

I have just finished my fourth picture and am taking it easy until the next picture, which will probably start about a month later.

Please mention The International Photographer when corresponding with advertisers.

The Best of Its Kind in a Field of Its Own

In December 1932 just as photographers were beginning to realize that the miniature camera was a serious instrument and was destined to revolutionize photography in many respects, the pioneer magazine of miniature camera photography made its appearance. At that time "Leica Photography" was issued as an eight page offset bulletin.

The interest in the little magazine was tremendous, and in April 1934 it was issued in regular printed form. The number of its readers increased steadily with remarkable speed; naturally the interest in the magazine was also augmented. To cope with this interest and provide its readers with much of the valuable information contributed by authoritative miniature camera users, "Leica Photography" was increased in size from time to time, to include more articles and illustrations.

With the number of its readers at present well over 15,000 "Leica Photography" now appears in a completely new and interesting dress. Its pages number twenty-four, including much more material, and it is profusely illustrated. The entire layout is different, and the illustrations beautifully reproduced. Nor does this mark the criterion, for improvements and additions will be made from time to time.

Readers are always invited to send in suggestions, ideas and photographs to "Leica Photography," which are published in the magazine. In this manner it serves as an exchange of ideas thereby fostering the progress of miniature photography, and the numerous photographs that are reproduced serve to show the miniature photographer the possibilities of his camera. Write for a sample copy of the new Dec. 1935 "Leica Photography" to E. Leitz, Inc., 60 East 10th St., New York City.

ArtReeves' Galvanometer

One of the latest additions to the long line of recording and laboratory equipment manufactured by the Hollywood Motion Picture Equipment Company is an oil damped galvanometer and optical system for recording the variable area type of sound track. The complete unit is shown in the accompanying photograph mounted on the standard model recording camera with the automatic speed control motor.

Although in over 90% of all major studios, sound recording in Hollywood is done on variable density recording systems, foreign studios and the smaller independent studios are finding it increasingly difficult to keep up with the high standards of quality set

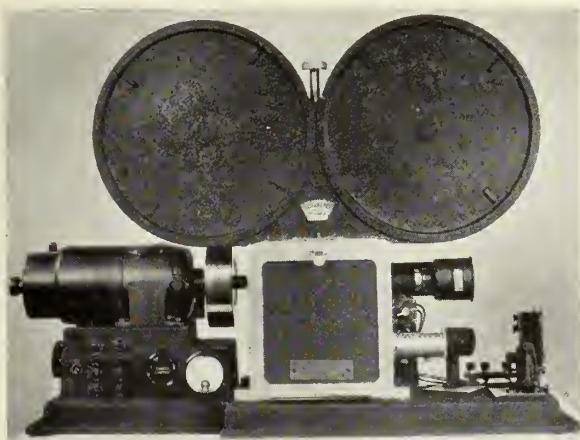
density sound track and to maintain the proper gamma in both negative and prints.

Since in variable density improper development of either the negative or prints results in a loss of quality a variable area recording system inherently stable and free from development troubles soon pays for itself in savings on retakes and reprints.

The Hollywood Motion Picture Equipment Company after exhaustive tests and months of experiments designed a foolproof oil damped galvanometer that far surpasses any previously offered to the trade in ruggedness, frequency range and low power requirements. The complete galvanometer is encased in an oil tight, oil filled, duralumin case, the light from the exciter lamp entering and leaving through a lens window. Oil damping of the mirror is used as the only means of damping the mirror which does not introduce spurious harmonics and resonance peaks. The oil also protects the mirror surface and keeps it free from dirt. No current is required for the magnetic field, a powerful new designed cobalt permanent magnet being used. The movement needs a power level of only .060 watts for 100% modulation of the sound track. This means that instead of the large bulky amplifiers and associated batteries formerly used, small compact amplifiers and batteries, weighing only a few pounds may be used.

The optical system is highly efficient, a 3 watt exciter lamp being sufficient on regular sound recording stock. Monitoring the sound track may at all times be checked visually. All sliding surfaces have been eliminated in the recording camera, a great help in hot, humid climates.

For those studios already equipped with an Art Reeves double sprocket recording camera a bracket having galvanometer and optical system solidly mounted may be purchased and their recorders changed over to variable area in a few minutes. An entirely new type amplifier, using the new all metal tube and including adjustable noise reduction has been built to go with the new galvanometer and optical system.



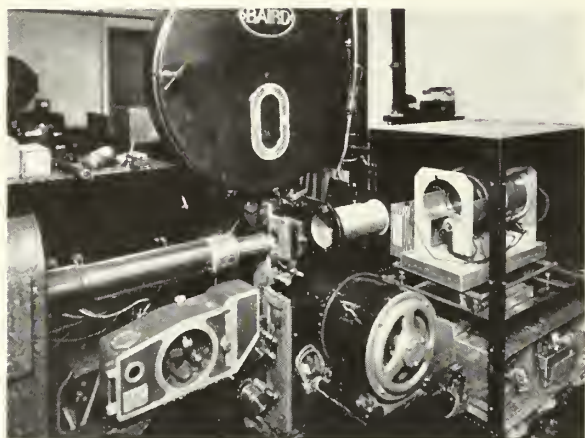
The ArtReeves' New Galvanometer

by these Hollywood studios. The reason for this is well known to all in the sound branch of the motion picture industry. The smaller laboratories feel they cannot afford the densitometers, sensitometers, continuous developing machines, exact temperature control of all developing solution and numerous other costly accessories necessary to process variable

Television In England

By ALAN LAWSON

(Chief Cameraman of Baird Television)



Telecine Electro Scanner for the transmission by television of talking pictures with a definition from 100 - 500 lines.

IN 1934 the British Government formed a Television Advisory Committee to seek an answer to the problem as to what system should be used for Television transmission.

In February 1935 they published their report with these recommendations: To build a Television station, with Baird Television Company, Ltd., working on 240 line definition and Electrical and Musical Industries Ltd., working on 405 line definition, each supplying a set of scanners.

The Advisory Committee recommended that all patents relating to Television reception should be laid open for all set manufacturers.

The site picked for the first Television Station is situated in North London—at The Alexander Palace. The Di pole Aerial will be some 650 ft. above sea level.

The Transmitter to be installed there will be of the ultra short wave type working on approximately 6.5 meters, with an output of 17.5 Kilowatts. The service area of this station will be close on 40 miles radius, which means that the whole of Greater London will be given a chance to receive Television programs that are expected to commence in the New Year.

This is a short summary of the apparatus that will probably be installed by the two companies:

Baird Television Company, Ltd.:

Spotlight Scanner. This is the older method of Television Scanning known as The Flying Spot Method. It consists of a moving spot of light which passes over a subject and the reflected light is picked up by photoelectric cells and then amplified.

The method is used for announcing, lectures, etc., and is capable of televising three quarter length figures.

Telecine Scanner. Consisting of a continuous projector turning at 25 pictures a second, a 60 hole disc revolving at 6,000 r.p.m. the light source being

supplied by a 60 amp. arc. This Scanner is used for Transmitting Films.

Intermediate Film Scanner. A direct pick-up method of Television, using a motion picture camera, sound recorder, developing machine, scanning gate and sound reproducer. The same type of disc and arc are used on this machine as on the Telecine Scanner.

The total delay period of this Scanner is 30 seconds, (the time from actual taking to actual scanning) accounted for thus: 5 seconds developing, 3 seconds washing and 15 seconds fixing; the remaining 7 seconds are taken up in the film travelling from one bath to the next.

The film used is a Panchromatic stock approximately the same as the non-Super Sensitive Pan.

Lighting, make-up etc., for this method, is the same as the usual film studio procedure.

This Scanner can be moved into a normal sized truck as used by news reel companies and thus becomes almost as flexible as the news camera. Its limitations are the same as the standard motion picture camera, which are comparatively small.

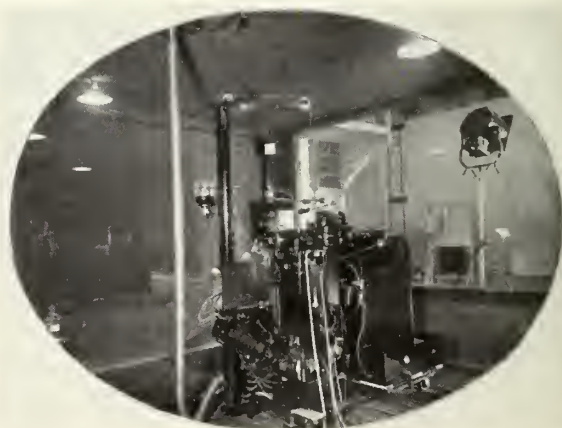
All the scanners mentioned so far have been of the mechanical type. We come now to those known as Electrical Scanners.

The Electron Camera. This was invented by Philo Farnsworth in Philadelphia. It consists of a high aperture lens focusing an image on to a photo-sensitive plate which in turn produces an electronic image on the anode of a dissector tube.

The electron image is moved electrically over an aperture to produce the scanning movement. Thence the signal is amplified in the usual way.

This scanner can be used either for Telecine work, (thus displacing the Scanning disc) or for direct pick-up on interiors or exteriors, as is the Intermediate Film Scanner.

Now we come to the E. M. I. installation which



Baird Television, Ltd., Crystal Palace Studios. Intermediate film scanner, for use on interiors or exteriors.

consists chiefly of the Iconoscope, invented by Zworykin in America.

This method is a combination of a photo cell and a Cathode Ray Tube: an image is focused on to a mosaic photo-electric plate, charging the minute cells which in turn are discharged by a Cathode Ray Beam. The discharged current is collected on a positive metal anode, this current is the Television Signal and is now amplified.

The Iconoscope is used in the same manner as the Farnsworth Electron Camera for Telecine or direct pick-up.

Reception

All the leading radio manufacturers will be marketing receivers that will be capable of receiving both systems.

Most of these receivers will utilize the Cathode Ray Tube for picture reception; picture size will vary from 5" x 6" to 14" x 16". The cost of the receivers will range from \$130 to \$500. The largest receiver will be no larger than a large Console Radio.

Programs

There is no definite proposal as to the type of programs that may be expected.

But this is a rough guess: The major part will be in the form of films, with vaudeville and talks from the direct pick-up methods. I do not think, that much will be done in the way of play production until Television has established itself as a definite entertainment.

Big Screen Television in Cinemas

The Baird Company has two methods for big screen work:

1. **Intermediate Film Projection.** The Television Image is received on a Cathode Ray Tube and is rephotographed by means of a continuous camera. The film is developed and then projected on to the screen in the space of 2 minutes.

Although this method is in its infancy, it shows great promise. Some film that was taken by this method was shown at the Cinema Exhibitors Association, at Cardiff, this year, making a good impression on those that saw it. It proved that Television could be used in cinemas for more than a novelty and that for important topical events it would be a definite asset.

2. **High Speed Mirror Drum.** In this method the Television Signal modulates a Kerr cell which allows a varying amount of light to fall on a High Speed Drum which throws the image on the screen.

This method of big screen Television is being installed at a London Theatre where it will be publicly demonstrated in the near future.

It has been stated that the Scophony Television Company, of England, have perfected a big screen Television Method, but to date no details have been published.

This is the fairly advanced state in which Television finds itself in England. Everybody is awaiting 1936 when Television transmissions start in earnest.

HOLLYWOOD TO JAPAN

Art Reeves reports the shipping to Japan, recently, of one of his latest type developing machines which was billed to the Yokohama Cinema Company. The shipment was accompanied by a varied assortment of other laboratory equipment.

"SPEAKING PAPER" DEMONSTRATED IN LONDON

"Speaking paper," an invention of an Argentine engineer, was recently demonstrated in London, according to a report from the American consulate-general, London, made public by the Commerce Department.

By means of this paper, it is possible to present a record of speech, music or any other sound in as handy a form as the daily newspaper. It is claimed that the invention will create a new industry, which will produce "speaking" books, sell the equivalent of 12-inch graphophone records and will also permit newspapers to print an actual record of a public speech, concert or play which readers could reproduce in their own homes, the report states.

The system, called the Fotoliptofono, works more or less on the principles of a talking picture. A sound track is registered on a celluloid negative by means of a microphone and oscillograph. From this photographic impression a block is made from which is printed the "speaking paper," a series of close parallels of jagged black lines, it was stated.

The paper is then placed in the reproducing apparatus, the subject of the recent demonstration. A piece of paper about the size of a single newspaper sheet was fitted on to the cylinder of a machine resembling the early Edison phonograph and a photo-electric cell retranslated the black lines into impulses which issued from an ordinary portable wireless set as speech, song and music in turn, according to the report.

It is reported that negotiations are in progress looking to the production of the "speaking paper" by the English graphophone companies.



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With President Roosevelt At Boulder Dam

By FRANK M. BLACKWELL

(Pathe News)



President and Mrs. Roosevelt at Boulder Dam

Las Vegas, Nev., Sept. 27th, 1935.

Frank M. Blackwell,
Pathe News, 1926 South Vermont Ave.,
Los Angeles, Calif.

FOLLOWING INFO VIA OMAHA BUREAU QUOTE
PRESIDENTIAL SPECIAL ARRIVING SALT LAKE CITY
TWELVE FORTY FIVE PM SEPT TWENTY NINTH DE-
PARTING TWELVE FIFTY FIVE PM STOP ARRIVING
LAS VEGAS ONE THIRTY AM SEPT THIRTY DEPARTING
ONE FORTY AM STOP ARRIVING BOULDER CITY THREE
NAUGHT FOUR AM STOP PRESIDENT PROCEEDING
THENCE VIA AUTO TO DAMSITE WHERE DEDICATION
ADDRESS SCHEDULED NOON SAME DATE UNQUOTE
STOP ADVISE YOU ARRANGE BE LAS VEGAS LEAST
DAY IN ADVANCE ORDER COMPLETE FINAL AR-
RANGEMENTS FOR COVERAGE.

Union Pac., News Bureau Denton.

And then the fun began for all the "news hounds" in Southern California. This wire, received by each news reel office, was the signal for all the newsreel trucks to be loaded with extra film—shipping boxes—cans—all the dozens of spare parts and pieces of equipment not carried in our trucks on the average story and which are invariably needed when on an assignment away from our bases.

President Roosevelt, headed cross-continent for a rest from his duties in Washington, D. C., was about to "swing into our territory!"

Greenwald and Jones, of Hearst Metrotone; Brick

and Tice, Lehman and McGrath, of Fox Movietone; Johnson and Sawyer, Koverman and McCarroll (who had to "break away" from the colony of Mormons on Salt Creek in the wilds of Arizona in order to be present), for Paramount; and the writer, with his newly-wedded recordist, Michael James Duffy, for Pathe—all pointed the noses of their "sound wagons" out along the three hundred mile stretch of highway toward Las Vegas and, ultimately, Boulder Dam, for the President's dedication of that great engineering triumph.

Noon, Monday, Sept. 30th! Thermometer registering 102!!! The President arrives at the dam-site. Ten thousand men, women and children—from desert ranches—from verdant valleys—from city and hamlet—from mountain cabins—on hand to hear him dedicate this twentieth century marvel to the well-being of humanity.

Cameras everywhere!!! News crews, travelling with the President, stationed on specially built platforms in front of, and just below, the speaker's stand, ready to photograph his every move and record his every word on this historic occasion. Others high on the towering peaks of both Arizona and Nevada—getting "long shots"—showing the entire awe-inspiring panorama—the mighty pile of cement blocking the turbulent waters which, for centuries, had cut their way, unhindered, down through strata after strata of the desert lands, to form the mile deep Black and Boulder Canyons. Still others up in "skips"—platforms travelling on cables, suspended across and above the canyon, with ends embedded and anchored in the mountain tops on either side of the river—to "shoot" down upon the speakers—the dam itself—the thousands of people, looking like pigmies on its parapeted top.

The President first stops on top of the dam, seven hundred and twenty-seven feet above the bared floor of the mighty Colorado river, and gazes raptly over the stone parapet of the highest dam ever built by man. Then he looks out over a greenish blue lake more than 380 feet below him—a lake stretching away for some eighty-three miles up a narrow canyon and spreading out over the arid, flat lands of Nevada and Arizona. Finally he goes to the flag-draped speaker's stand to make the dedication address for which he has travelled almost the breadth of our continent.

And the men, women and children stand and



See all these men? Well, most of 'em are news-reelers. Yes, that's the President delivering his address at Boulder Dam.

listen, out there on top of this great monument which man, in skill and daring and science—with his very sweat and blood—has erected—and the news cameras grind—until the President's final: "Well Done!"

Sept. 30th, 1935.

C. R. Collins,

Assignment Editor, Pathe News,

35 West 45th St.,

New York, N. Y.

NONEXCLUSIVE DAM DEDICATION FILM DUE YOU

EIGHT FORTY FIVE TUESDAY MORNING VIA RAILWAY

AIR EXPRESS WAYBILL NUMBER THREE NINE TWO
FIVE EIGHT FOUR REGARDS.

Blackwell.

Then, with the exposed film packed and aboard a New York bound plane, headed for our respective editorial offices, and the sending of the above wire—AND THEN ONLY—was the assignment ended—the story "covered"—with the hope in the heart of each "News Hound" that his editor would also say: "Well Done!"

AMATEUR PHOTOGRAPHY

FILM CLIPS

Camera Speed For Close-Ups: Most average home-movie reels of family and friends contain a number of Big Close-ups. In such films the cameraman is chiefly concerned in securing close-ups which are characteristic of the subject being photographed, rather than portraying any specific action. More often than not, if Big Close-ups are taken with the camera running at normal speed, plus the inability of the subject to gage the tempo of movement, the nervousness of your subject becomes apallingly apparent when later the shot looms on the screen. You will get a much smoother shot, with a lot of the jerks of the subject ironed out, when shooting a 3-foot focus Big Close-up, if you use 24 speed. This slight increase in camera speed over normal will effect a very natural motion of the face on the screen. And when shooting at 24 speed, don't forget to set your lens for the increased exposure. This compensation calls for one-half stop larger than for normal 16 speed.

Dolly Shots: Have you ever tried a traveling camera shot? It is quite simple—if you can borrow Junior's wagon—and adds variety to your films. Simply seat yourself in the wagon, have Junior push the wagon towards the subject, while you keep your camera in operation. The wagon must not be pushed too quickly; you need smooth motion. A camera speed of 24 or 32 frames per second is indicated for a dolly shot.

Snow Exposures: At this season of the year, do not miss the opportunity of securing some scenic shots of the snow-covered landscapes. A word of caution, however, about exposure. Watch out for over-exposure! A brilliantly sunlit expanse of distant snow has great reflecting power, so with regular Panchromatic film stops F 11 and F 16 are advisable.

Splices: If you have never become adept at making a good, strong and neat splice, there is no time better spent than learning the art. With a few feet of discarded film to work on, practice making splices. This is one phase of amateur movies everyone should be adept at.

Novelty Title: Alphabet soup letters provide simple material for a novelty title, if your title board is of the small card type which allows for the camera to shoot down on a card. Lay out the wording of the title with the alphabet soup letters. Start the camera and when you have sufficient footage, carefully blow the letters from the title card. On the screen, when the title has been read, the letters will disappear as if by magic.

Backward Motion: Oldtimers can skip this paragraph, as its content is directed to the beginner in amateur movies. You can create scenes of cinemagic by photographing a view, such as one of heavy downtown traffic, by holding the camera up-

side-down during exposure. When your film is returned from processing, cut out the traffic shot, reverse it end for end, and splice it into your roll again. You'll see your city traffic doing queer things on the screen. Always follow this same procedure whenever you desire to obtain backward motion on the screen.

Fast, Trick Motion: There are many amateurs possessing variable speed and hand-crank cameras. Too often when a shot calls for a bit of comedy action, the amateur thinks only of the 8 speed. Now this 8 speed is in many respects ideal, but why ignore the hand-crank shaft? It's not there for emergency use only, in case of a breakdown of your motor drive, nor only to photograph an entire roll of film continuously. Rather the hand-crank shaft is the original trick crank; capable of giving various speeds to your camera under the 8 per second. Just a little practice at hand cranking with an empty camera, will soon make you adept at judging speed. And you'll find 4 frames per second will give you the original Keystone Kop chase speed better than by any other means. Such slow exposure speed as 4 per second requires a very small aperture setting on your lens—cut it way down to F 16 at least, when working in good light.

Projection Hint: When screening your movies, don't allow a broken splice to cause a long interruption while you try the tuck-under system unassisted. Your guests will fidget and you'll come close to losing your mind trying to get that stray film onto the take-up reel. Keep a box of paper clips handy, the small, round variety. Then it is only a matter of a moment to clip together the broken splice (after the film has passed the last sprocket or roller), and continue with your show.

Storage Cans: After all, the only proper place for a reel of film, when it is not in use, is in a container. Not left open to attract dust, heat or moisture. Film tins, in which originally is packed positive film, are most inexpensive and serve well as a container for a projection reel of film. A small piece of blotting-paper slipped in the tin will act as a humidifier. Smaller tins, such as 16mm, 100-foot positive is packed in, will serve nicely for projection reels of 8mm film.

Tripods: We don't care whether or not you have nerves of steel—the truth is you can never hold a motion picture camera as steady as can a tripod. Tripods will always give better results. You want a movie of your subject, **not** of a background. The true illusion of motion is strengthened considerably when the background remains in a constant position on the screen. And too, once a camera rests upon a good tripod, the temptation to panoram is greatly lessened. Invest in a good tripod, you won't regret it. And use it! If not on all your shots, certainly on all your interior work.

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Some Data On Building a Title Board

By HAMILTON RIDDEL, Editor

IN such a popular hobby as home-movies, there are always to be found those amateurs, possessing a small work shop and a capacity for handling tools, who will desire to build their own accessory equipment. To these cine-makers we dedicate this data on building a title board. We hope it may smooth their way because constructing a title board presents many perplexing problems, as only one who has made his own board for the first time knows all too well. Be it said at the beginning, however, that building a good title board calls for great accuracy and much patience on the part of the builder; yet your own board, made to suit your own particular requirements, will never cease to be a most useful adjunct to your personal movie making.

The type of title board you will choose to build will depend to a large extent on your camera; on its features as well as on its limitations. For all ordinary requirements, however, you will most likely choose the type which has the camera mounted on the board at one end, with the title card holder at the other.

Two very important requisites of a title board are sturdy construction and solidness in the camera mount. A title board may not be altogether neat in appearance—more often it is not—but it must by all means possess these two, foregoing qualifications. Flimsy construction and a hit or miss camera mounting will only yield poor results in the last analysis.

Good, hard wood is the safest material for a title board base. One inch, or three-quarter inch, stock is preferable. Laminated stock of this thickness will serve nicely for the purpose as it is less liable to subsequent warping, thus destroying the accuracy of your title setup.

Your camera mount must insure the camera being mounted to the title board in a rock steady position. Not the slightest movement is permissible. Moreover, as in most instances the average amateur possesses only one camera, necessitating its removal from the title board at frequent intervals for other photographic work, the camera mount must be of such accuracy that each time the camera is replaced on the board, it will automatically assume the same exact position as in former setups.

Whether you will mount your camera on the title board vertically or horizontally depends upon the make you own. Those amateur movie cameras of Eastman manufacture, the Cine-Kodaks, which follow the same general shape as the well-known Brownie Box still camera—and all other makes of movie cameras of like design—should be mounted in normal vertical position. Their base is substantial, and the regular tripod socket on the bottom may well be used for attaching the camera to the board. It is good practice, however, to provide side guides of some sort, either of metal or of wood, screwed permanently to the title board. These guides should fit the sides of the camera as snugly as possible, to

insure that the camera assumes the same, exact positioning at each setup. Without these side guides there is a distinct tendency for the camera to shift slightly, to the right or to the left, thus making for lopsided results in your finished titles.

With other type amateur movie cameras which, because of their particular design and shape, have a smaller base, such as the Bell & Howell Filmo and the Victor Cine Camera, it is more advisable to mount this kind in a horizontal position on the title board. A camera "bed", carefully cut out to fit the general outline of the camera, with a wooden end brace, through which a bolt extends into the tripod socket, will assure rock steadiness and accurate positioning every time. When the camera is mounted horizontally, the title card holder must of course be attached to the title board in a like, horizontal position—to match the camera position. This is in no way inconvenient.

The next consideration in building a board is the matter of card-size which you will want to standardize on. There are several sizes, all the way from 11 x 14 inches, 9 x 12 inches, down to the smaller 3¼ x 5½ inches. The larger size cards of course allow some leeway in setups, but as they usually call for hand-lettering, a rather difficult undertaking for the average amateur with no particular training in this line, the smaller cards seem to be more adaptable for home use. Again, a small card is advisable, for in this case the title board need not be large nor bulky, there being only a comparatively few inches necessary between camera lens and title card. Also, a small card is much cheaper in the end, and it may be typed out on an ordinary typewriter, a convenience you should not overlook.

A convenient method to determine the approximate area covered by the lens, working close to the small card as on a title board, is as follows: Set up your projector, making sure its lens is a regular 2-inch focus one, and snap on the lamp. Move the projector to or from the screen, as the case may be, until the white frame area is somewhat smaller than your title card. When this proper size has been determined, measure carefully the distance from the screen to the tip of the projection lens. For example, the result may be 18 inches. If the lens on your camera is a 1-inch (25mm) focus one, simply divide your result, 18 inches, by two. The result, 9 inches, is the distance which will be required on your board from title card to the tip of your camera lens. This method is a good aid in arriving at the overall length of your title board base.

The most convenient type of title card holder is a simple wooden frame. On the back of the frame are screwed two pieces of spring metal strips, which will hold the card in place and yet allow for convenient centering of the card to be photographed. The card frame of course is permanently mounted, at the proper distance, on the base of the title board. Its center should match the center of the camera lens, both sideways and up-and-down. Allowance must be made so that no part of the frame will be included by the camera lens. On the card frame there may be guide lines, or marks, for easy centering of the title before the camera lens. These guide lines are

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nt of Amateur Photography

MES, sir, **anything** can happen in the film game, and it sure **did** in the early days!" We were comfortably seated in the lab office. Art, the one time amateur, now superintendent of a professional motion picture laboratory, had just finished speaking.

"What did?" I queried. For although there had been a hard run of film through the lab that day, even now continuing into the evening, I knew Art was never too tired to talk pictures. "Sounds to me as though you'd had some interesting experiences; let's hear about 'em."

"Okay," Art rejoined. "Movie making was mighty different in the old days. Today the amateur movie maker has it pretty easy by comparison."

Settling himself in his chair, a bit tired perhaps but with his face reflecting bygone happy days, Art continued his story:

"Well, let's see . . . it must have been over thirty years ago when I first took up making motion pictures. I lived in a small town in the northern part of the state, where I worked for the railroad. The single movie theatre the town boasted of was my favorite hangout, and there it was that I spent most of my spare moments. For a very long, long time I studied the pictures shown on the screen. And then, with the enthusiasm of my eighteen years, I got the idea I'd like to make my own.

"In those days, however, buying a motion picture camera was a real job; hard on one's patience as well as on one's pocketbook. There were no photographic dealers, nearby or far away, to offer suggestions or to show you movie equipment. The one popular camera used almost universally by early film producers was the old Pathe—you remember, the one with the rear crank on it. Being the professional standard of that time, the Pathe was beyond the reach of the average amateur because of price. Well, I'd watched every ad I could when at last I ran across one offering a camera at the startling low price of \$150, I think it was.

"It took a lot of saving, for that first outfit, but one day I sent to New York City for my first motion picture camera, an Eberhardt Schneider. For those days, it was the last word in moviecameras, though this point could be argued today.

"The old Schneider box was made of teakwood, and its capacity was 165 feet of 35mm film. The film magazines were of the interior type, placed side by side, with a cross-over loop to the aperture gate. The gate itself was nothing more than a piece of flat metal, with absolutely no tracks on it. The pressure plate was felt-lined and was adjustable. And the intermittent movement was the Slip Claw, also adjustable. Well, I'll tell you, those two adjustments could drive a man crazy! If the pressure plate of the gate was adjusted too tightly, you'd scratch the devil out of your negative or jam the camera! If the Slip Claw adjustment wasn't just right, the movement would back up your negative! A constant frame-line in that camera was nothing short of a miracle. There were only two gears in the old box which, when they got spinning, made the camera sound more like a threshing machine than anything

"It Happened One Day"

else. And there was no footage counter or meter. I soon found out you just cranked the camera until you thought you were out of film—and more often you were wrong rather than right. So I got a bright idea. I mounted an old bicycle cyclometer, with a 'star and cam' connection, to the camera. This make-shift meter gave me readings by half-foot steps. Without doubt, the most valuable item on the camera was the genuine Carl Zeiss, 2-inch, focusing F3.5 lens. I've still got that great old lens, and have used it on several of my later cameras.

"My next important acquisition for my outfit was a tripod. I chose a surveyor's tripod, which set me back about \$40. Naturally, there were no pam or tilt gears. But their lack didn't daunt me. Whenever I wanted to pam, I'd just grab the old camera with my left arm and twist while cranking the old box with my right. The results on the screen were full of jerks, but still the shots **were** pams! And if I wanted a tilt, a friend of mine would slowly move one leg of the tripod, as I cranked merrily away.

"Now that my outfit was more or less complete, the difficulty was to secure some film stock. Again I was snagged, until I learned of the French negative, Lumiere film. I sent off an order for a supply . . . it was cheap in those days, believe negative was only one and a half cents per foot. After several weeks, the film stock arrived and with a letter of thanks for my order, containing advice on exposure from Lumiere. But the darn thing was written in French" What a help that was.

"Came the day when I was ready to take my first movies, a parade in the old home town. Remember, I was the first to ever have a moving picture camera in town . . . I thought I **was** somebody, and so did everyone else. Practically bursting with pride over my outfit, I set up the old Schneider on the main street, while the townfolk looked on with interest. Well, the parade started and so I began to crank away. The first shot seemed to be going all right. But as I turned the camera for the next scene, all of a sudden—wham!—the camera crank shot out of my hand and high into the air! My footage counter had jammed and locked the entire mechanism. Forcing it by dead center, I regained my crank and continued merrily on my way to finish the film . . . or so I thought. I'd just emptied one magazine and was loading another into the camera, meanwhile thinking of the swell pictures I was getting when, with a terrible feeling, I discovered I'd left the lens cap on all the time I thought I'd been exposing the first magazine! There it was, there could be no doubt; the little lens cap to which was attached a string leading to the box. But necessity was still the mother of invention then as it is now. Yanking the safety string from the box, I tied it to the camera crank. No more was I harried. Thenceforth every time I turned the crank, the cap very obligingly popped from its perch on the lens! And so my sec-

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The Cinematographer's Book of Tables

By FRED WESTERBERG

SHUTTER OPENING—EQUIVALENT STOP

F-VALUES REQUIRED IN ORDER TO OBTAIN THE SAME EXPOSURE AT VARIOUS DEGREES OF SHUTTER OPENING

CAMERA SPEED CONSTANT

240°	160°	120°	80°	60°	40°	30°	20°
1.7	1.4	1.2	1.0	—	—	—	—
2.0	1.6	1.4	1.15	1.0	—	—	—
2.5	2.0	1.7	1.4	1.2	1.0	—	—
2.8	2.3	2.0	1.6	1.4	1.15	1.0	—
3.5	2.8	2.5	2.0	1.7	1.4	1.2	1.0
4.0	3.3	2.8	2.3	2.0	1.6	1.4	1.15
4.9	4.0	3.5	2.8	2.5	2.0	1.7	1.4
5.6	4.6	4.0	3.3	2.8	2.3	2.0	1.6
6.9	5.6	4.9	4.0	3.5	2.8	2.5	2.0
8.0	6.5	5.6	4.6	4.0	3.3	2.8	2.3
9.8	8.0	6.9	5.6	4.9	4.0	3.5	2.8

EQUIVALENT F-VALUES OBTAINED WHEN THE SHUTTER IS CHANGED INSTEAD OF THE LENS DIAPHRAGM

CAMERA SPEED CONSTANT

240°	160°	120°	80°	60°	40°	30°	20°
1.15	1.4	1.6	2.0	2.3	2.8	3.3	4.0
1.3	1.6	1.9	2.3	2.7	3.3	3.8	4.6
1.6	2.0	2.3	2.8	3.3	4.0	4.6	5.6
1.9	2.3	2.7	3.3	3.8	4.6	5.3	6.5
2.3	2.8	3.3	4.0	4.6	5.6	6.5	8.0
2.7	3.3	3.8	4.6	5.3	6.5	7.5	9.2
3.3	4.0	4.6	5.6	6.5	8.0	9.2	11.3
3.8	4.6	5.3	6.5	7.5	9.2	10.7	13
4.6	5.6	6.5	8.0	9.2	11.3	13	16
5.3	6.5	7.5	9.2	10.7	13	15	18
6.5	8.0	9.2	11.3	13	16	18	22

CAMERA SPEED—EQUIVALENT STOP

EQUIVALENT F-VALUE OBTAINED AT DIFFERENT CAMERA SPEEDS WHEN THE SHUTTER VALUE REMAINS CONSTANT

Camera Speed in Pictures Per	Relative Exposure	STOP ACTUALLY USED						
		11.3	8.0	5.6	4.0	2.8	2.0	1.4
		EQUIVALENT F-VALUE						
240	1/10	45	25	18	13	9.0	6.3	4.5
192	1/8	32	22	16	11.3	8.0	5.6	4.0
144	1/6	28	20	14	9.8	6.9	4.9	3.5
120	1/5	25	18	13	9.0	6.3	4.5	3.2
96	1/4	22	16	11.3	8.0	5.6	4.0	2.8
72	1/3	20	14	9.8	6.9	4.9	3.5	2.4
64	3/8	18	13	9.2	6.5	4.6	3.3	2.3
48	1/2	16	11.3	8.0	5.6	4.0	2.8	2.0
36	2/3	14	9.8	6.9	4.9	3.5	2.5	1.7
32	3/4	13	9.2	6.5	4.6	3.3	2.3	1.6
24	1	11.3	8.0	5.6	4.0	2.8	2.0	1.4
22	1 1/10	10.8	7.6	5.4	3.8	2.7	1.9	1.4
20	1 1/5	10.3	7.3	5.2	3.6	2.6	1.8	1.3
18	1 1/3	9.8	6.9	4.9	3.5	2.5	1.7	1.2
16	1 1/2	9.2	6.5	4.6	3.3	2.3	1.6	1.2
14	1 7/10	8.6	6.1	4.3	3.1	2.2	1.5	1.1
12	2	8.0	5.6	4.0	2.8	2.0	1.4	1.0
10	2 2/5	7.3	5.2	3.7	2.6	1.8	1.3	.9
8	3	6.5	4.6	3.3	2.3	1.6	1.2	.8
6	4	5.6	4.0	2.8	2.0	1.4	1.0	.7
4	6	4.6	3.3	2.3	1.6	1.2	.8	.6
3	8	4.0	2.8	2.0	1.4	1.0	.7	.5
2	12	3.3	2.3	1.6	1.2	.8	.6	.4
1	24	2.3	1.6	1.2	.8	.6	.4	.3

THREE COLOR PROCESS ANNOUNCED

(Continued from Page 3)

feature productions made in this country and that an average of twenty-five thousand dollars will be spent on each production for color prints with which to advertise the color production.

It is intended by the owners of this process, yet to be given a name, to establish their permanent place of business within the next thirty days and before the expiration of this time they will be in a position to introduce their product to a market that will quickly absorb all their time and talent in the production of motion picture colored stills alone. It is also intended to enter the industrial field which is much larger in its scope than that of motion pictures. These two fertile fields offer them an unlimited opportunity to expand, though there are other lucrative fields, such as portraits, miniature, three color lantern slides for advertising purposes, etc.

The Sartov-Linstead camera is of a very peculiar

design, it being somewhat in the shape of an airplane, having wings and fuselage. The average cameraman can possibly conceive of the fundamental and basic purposes of such a design and it is exceedingly unique in its construction, though mobile and light so as to enable the operator conveniently to move it about as he would the ordinary still camera. This camera will soon be introduced to the cameramen of Hollywood.

NEW KODACHROME PROCESSING STATION

Eastman Kodak Company has opened another completed Kodachrome processing depot at Chicago. There are now three such stations in the United States, the two others being located at Rochester and Los Angeles. The address of the Chicago station is 1727 Indiana Avenue.

COMPLETE

UNPARALLELED photographic quality...
speed...fine grain...Eastman Super X has
them all. It is the complete modern negative
film. Agreeing that it leaves nothing to be de-
sired, cameramen and producers are using it
in the bulk of today's feature productions.
Eastman Kodak Company, Rochester, N. Y.
(J. E. Brulatour, Inc., Distributors, Fort Lee,
New York, Chicago, Hollywood.)

EASTMAN *SUPER X*
PANCHROMATIC NEGATIVE

Technicolor On the Way To Its Greatest Triumph In "The Trail of the Lonesome Pine"

By RAYMOND PALMER



ILL Walter Wanger's "The Trail of the Lonesome Pine," made in Technicolor, become another motion picture history maker?

That is the question being asked by those privileged few who have seen rough cuts from this feature that was photographed by William Howard Greene, Local 659, in the new three-color Technicolor. It will be recalled that eleven years ago "Wanderer of the Wasteland" was filmed in the old two-color Technicolor process. That picture started the stampede to color which reached its height in the early thirties. It "made" the Technicolor company.

Nothing had ever been seen before that could approach the film for sheer, breath-taking beauty. The fundamental reason for its success was the fact that it was a picture of the great out-doors. Nature had provided the colors, and the camera had transcribed them to the film as well as was possible with the two-color process. Truly, it was natural color, as near as it was mechanically possible to photograph it. It charmed the theatre-going public; made them color conscious.

Two-color Technicolor had its day and, as everyone knows, color production fell off. Then came the newly perfected three-color Technicolor process which bids fair to revolutionize motion picture color photography. A short has been made with it; also the feature, "Becky Sharp." While the colors were true and beautiful, there was too much color deliberately thrown into the productions. They did not again make the public cry for color. But now with "The Trail of the Lonesome Pine", according to those who have seen it, we have something else again.

"We stuck to the natural in color in this film," explains Mr. Greene, the Technicolor cameraman in charge of the photography. "Every effort was made to keep away from adding color just for color's sake. The story is laid in the Blue Ridge Mountains of Virginia, and while we did all our exteriors at Big Bear, in California, we found locations that will match anything in Virginia, and we set about to photograph them just as they look to any traveler who journeys down through the Southern state.

"Where as in so many productions in times past, everything colorful that could be thought of was put before the camera, in this film people and places were photographed just as they really are. In other words, in 'The Trail of the Lonesome Pine' we strove to produce **natural** color, and **not just color**. When a character naturally would wear a pair of dirty black trousers, that's what he wore in this film, and not a pair of bright red ones with green stripes running down the sides. Even red and black checkered shirts, which might well be found in the mountains, were not allowed, because the effect might suggest that they had been added to bring out more color.

"The lighting was all in a very low key; decidedly unlike most lighting for color pictures. But the low key blends in with the story and the characters and the locale.

"When you see Henry Fonda plowing in a field in this film you will see him dressed in the drab

clothes such a character would wear in real life, and not flashing on the screen in the outfit one would look for in a musical comedy. Of course, there are spectacular scenes, such as one in which a big steam shovel is blown up by dynamite. That was a thriller for everyone, especially those of us at the cameras. Two hundred and forty-four sticks of dynamite were planted under that shovel. The cameras were protected by bulwarks made of 3 by 12 inch planks. These were put up in front of the cameras and over the tops of them, with a hole large enough to shoot through. When the explosion came and the debris started falling on the planks just over our heads, well—it was exciting. With the new three-color process we got that explosion exactly as it looked.

"Another spectacular scene is the burning of a big construction camp. That was a scene for which we had to await the proper time for shooting, due to the terrible fire hazard up in the Big Bear district. We had to wait for rain before we were allowed to do it.

"Like 'Wanderer of the Wasteland,' 'The Trail of the Lonesome Pine' is made up largely of exteriors, vast sweeps which thrill you with their beauty. Shot with a color process that gives you the ultimate in natural color reproductions, these exterior scenes will give the public what it long has been wanting—naturalness. Every vacation season hundreds of thousands of persons travel far afield to see the beauties of the various sections of the various countries. They exclaim as they look at the magnificent colorings of the Grand Canyon, or the breath-taking sight of the Green Mountains of Vermont.

"It is nature as God created it that they see and thrill to; not a flock of color added by humans. Color photography should place upon the screen these same natural scenes in the same natural color. That is what we strove for in 'The Trail of the Lonesome Pine'. A restful valley is still restful on the film. It is not spoiled by the sudden injection of a group of colorfully garbed people waving bright colored flags. The audience will not be conscious of the fact that they are looking at color. They will only see men and women going about the business of life looking **real**."

It would seem as though Mr. Wanger, his director, Henry Hathaway, and his cameraman, Mr. Greene, have gone about something that promises to be another milestone in the progress of motion picture photography. Many are already saying that this film will be the most important one made in many years; that it will bring color to the front as never before.

In selecting Green to handle the photography, a man of great experience in photographing the great outdoors in color was chosen. He has made Technicolor films in Europe, by the shores of the Mediterranean, in the magic Isle of Bali, in French and Indo-China and far under water down off the coast of the Bahamas where he once was nearly drowned when a tropical hurricane swept their equipment to destruction. He knows color and how to photograph it.

Recent Photograph and Sound Patents

By ROBERT FULWIDER

Registered Patent Attorney

(Wilshire at La Brea, Los Angeles)

2,019,615-2,019,616—Sound Transmission System; Sound Recording System. Both by Joseph P. Maxfield, assignor to E. R. P. I., New York City.

2,019,675—Sound Picture Screen. Harry Hertzberg, Brooklyn, N. Y.

2,019,698—Device for Illuminating Lenticulated Film. Fritz Fischer, Felix Strecker and Kurt Rantsch, assignors to Siemens & Halski, Seimensstadt, Germany.

2,019,718—Differential Treatment of Color Images. Leopold Mannes and Leopold Godowsky, Jr., Rochester, N. Y.

2,019,735—Focusing Objective. John W. Scott, assignor to Eastman Kodak Co., Rochester, N. Y.

2,019,748—Photographic Printing Apparatus. C. M. Tuttle, assignor to Eastman Kodak Co., Rochester, N. Y.

2,019,767—Motion Picture Camera. C. E. Philmore, assignor to Tobin Tool & Die Co., Fond du lac, Wisc.

2,020,521—Projecting Apparatus. Albert B. Scott, Los Angeles.

2,030,564—Method of Preparing Film for Reproduction in Color. Gabriel G. Moreno, assignor to C. M. C. Corp., New York City.

2,020,607—Photographic Material (Film). Gerd Heymer, assignor to Agfa Ansco Corp., Binghamton, N. Y.

2,020,636—Sensitizing of Silver Halide Emulsion. Walter Dieterle, assignor to Agfa Ansco Corp.

2,020,688—Process for Production of Color Separated Negatives and Positives. Michael Kronschnabl, Munich, Germany.

2,020,775—Method of Producing Photographic Pictures in Colors. Bela Gaspar, Brussels, Belgium.

2,020,820-2,020,821—Method of Producing Composite Pictures. Conrad G. Briel, assignor to Cinema Development Co., Chicago, Ill.

2,020,857—Device for Recording a Sound Film. Willem Six and R. Vermeulen, assignor to N. V. Philips' Corp., Eindhoven, Netherlands.

2,020,861—Carrier for Recording and Process for Making Same. R. C. van der Willigen and J. H. de Boer, assignors to N. V. Philips' Corp., Eindhoven, Netherlands.

2,020,901—Process for Producing Pictures. A. Miller and W. Keis, assignors to Agfa Ansco Corp., Binghamton, N. Y.

2,021,016—Film Splicing. Albert Narath, assignor to General Electric Co., New York.

2,021,162—Apparatus for Stereoscopic Picture Recording and Reproducing. George W. Walton, London, England.

2,021,181—Automatic Electric Change-over for Motion Picture Machine Shutters. Cecil E. Hall, Freeport, Texas.

2,021,264—Printing Device for Sound Films. R. Schmidt, assignor to Agfa Ansco Corp.

2,021,533—Telltale System for Projection Apparatus. Walter S. Wolfe, Greenwood, Mass.

2,021,560—Cinematographic Mechanism. Pedro Lira, Santiago, Chile.

2,022,014—Method of Making Reflex Copies. L. P. F. van der Grinten, Venlo, Netherlands.

2,022,108—Sound and Motion Picture Reproducing Machine. James W. Early, Los Angeles.

2,022,353—Film Magazine. A. Kindelmann and J. Pearlman, assignors to International Projector Corp., N. Y.

2,022,362—Amateur Motion Picture Camera. E. S. Porter, New York.

2,022,366—Gate and Lens Structure of Motion Picture Film. Ewald Boecking, assignor to International Projector Corp., N. Y.

2,022,432—Printing Apparatus for Lenticulated Film. A. Rodde, A. H. Herault, V. Hudely and Jean Lagrave, Paris, France.

2,022,454—Monocular Photographic Apparatus. Allen L. Barnes, Oak Park, Ill.

2,022,473—Method of Rerecording Sound. James V. Maresca, assignor to R. K. O. Corp.

2,022,492—Phonographic Apparatus. Murray S. Clay, assignor to R. C. A.

2,022,495—Sound Recording Apparatus. Glenn L. Dimmick, assignor to R. C. A.



NEWS-WEEK PHOTO BY WENDELL MACRAE

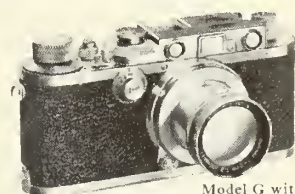
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AMATEUR PHOTOGRAPHY

(Continued from Page 15)

QUESTIONS and ANSWERS

By F. HAMILTON RIDDEL

1. Is it possible to enlarge 16mm to 35mm film?

Yes, but this should only be done when there is no other way out; such as a unique shot, of news value, taken with a 16mm camera when there was no 35mm outfit recording the scene. Or in the case of early amateur films of family value filmed on 35mm. In such instances, the value of the shots more than compensate for the considerable loss in quality of the transferred image.

2. Are tests, for checking proper exposure and lighting, advisable?

Very much so; and quite useful to the cinematographer in filming important work. Two or three feet, exposed, and developed in total darkness for the specified time of such developer, will give a positive check on exposure and lighting. The test will, of course, render a negative film but is sufficient in itself. Subsequent processing of the entire roll of film by a laboratory, whether by reversal or negative-positive processing, will give similar results.

3. Does amateur size film keep well?

Yes, quite, if properly stored away. The three enemies to the life of such film are: dust, excessive heat, or excessive moisture. Exposure of the film to these common enemies quickly deteriorates it. Careful storage, in film tins or in humidor cans, in a cool place is advisable.

4. In certain shots there is a dark shadow in the corner of the picture, cutting off part of the view. What is the cause?

In holding a motion picture camera, do not allow your finger or other solid object to come between the camera lens and the subject you are photographing. The view-finder of the camera does not warn of such obstruction to the camera's eye, so be careful.

5. At what camera speed are sound films recorded?

Sound picture exposures are made at the standard rate of 24 pictures (or frames) per second. This rate is, therefore, 8 more frames per second than the standard 16 pictures per second for silents.

6. What is the cause of blurred pictures?

This condition occurs most often as a result of panoraming too quickly with the camera. Panorams should always be made very slowly, except in the case of following a nearby, fast moving subject in which event the moving subject is of greater importance than the background. Another cause of blurred pictures obtains when the camera is not held steadily in the hand of the photographer.

7. Although the background of a scene is sharp, an automobile in the foreground is blurred. Why is this?

The automobile moved too rapidly and too close to the camera to be stopped by the fixed shutter speed of the usual amateur motion picture camera. As such cameras do not have provision for changing shutter speeds, it is imperative to shoot rapidly moving subjects from an acute angle of view, rather than at right angles.

8. How is slow-motion accomplished? Fast-motion?

For silent films, the normal speed of the camera is 16 frames per second. Therefore, the greater

number of frames exposed per second the slower will be the action. Conversely, the lesser number of frames exposed per second the faster will be the screen action.

9. Why is it standard practice to photograph titles for Kodachrome or Dufaycolor pictures on a tinted base film?

Since such movies are in natural color, it is more appropriate to interrupt the pictures with a tinted title than with a "cold" black and white one.

10. In stopping a projector for a single frame still picture, is it advisable to hold same on the screen for a considerable length of time?

No. It will bore the audience if held on the screen too long. More important and in spite of safety film, proper aperture ventilation and light shield, protracted still projection is hard on the film.

11. How may normal camera speed be checked?

With no film in the camera and with the camera door open and with the camera set for 16 speed (if camera is of the variable speed type), press the exposure button. Watch and count the revolutions of the film feed sprocket. This sprocket should revolve at the rate of two times per second. For easy checking, time the sprocket at 20 revolutions every ten seconds. Some cameras, such as the Victor Cine, have a regulating screw which is extremely convenient in adjusting speed to normal. Normal camera speed is most important. Otherwise decided changes take place in exposure calculations and in the tempo of the screen action. Always be sure your camera is running at proper speed for normal pictures.

12. Why do rental libraries request that their film subjects be returned to them without rewinding of the film?

Observance of this request saves your time and saves theirs. After film subjects are returned to the library, they must be thoroughly inspected for any possible damage. Since this necessary film inspection can be done at one and at the same time as rewinding, it is more convenient to the libraries, rather than winding through a rewind subject for inspection purposes and then immediately rewind it again, so that the film is ready for another screening.

As a service to amateur movie-makers, we extend a cordial invitation to write in questions which will be replied to in this department. Address all such letters to:

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Motion Picture Production In South America

By JOHN ALTON

(A Letter to the Editor from John Alton of Local 659 "Tecnio de Luz," "Cameraman" in Argentina.

ARGINENTINA'S motion picture production business as yet cannot be called an industry. It is still in its experimental stage, but judging by the talent of its pioneers and the enormous progress it has made in such a short time, it may soon turn out to be one.

Up to the year of 1932 a few insignificant silent pictures were locally produced by amateurs. Then the sound came. In the year of 1932 a well known local theatrical producer built the first sound studio and in the same year produced the first Argentine "talkie" based on a successful stage play. This film, partly because of being the first one of its kind, had quite a success, both financially and artistically. Prints of it were sold to all the republics of South America and even to Spain.

Encouraged by this success, a few individuals turned to the promising new field of film production. The year of 1933 found several locally produced talkies, a few of which were quite successful. And so production, from one film a year in 1932, has gradually grown to about fifteen in the year of 1935. That local production has not progressed more is partly due to the fact that local producers do not as yet realize the importance of a good story as the base of a successful film.

An early attempt to discover "new talent" and use amateurs as actors, has failed completely. Pro-

ducers soon realized that, in order to sell their finished product, actors of the theatre must be employed. Some of these actors soon adapted themselves to the camera and today Argentine is proud of the few box office names known throughout South America.

Right now production has come to a standstill. Several films are all ready, but the season being over, producers prefer to wait for the higher entrance fees of the coming season.

Local production is still in the hands of so called private capitalists, with a limited sum at their disposal, hence a product suitable only for the local market. But in the background serious capitalists are eagerly waiting and watching every step. If the coming releases are only fairly successful they expect to take the field. Great capital will be invested, new studios built, more technicians imported, resulting in better pictures, to be sold, not only to the local market, but to the entire motion picture industry of Spanish films.

Mr. Alton is well known among the craft in Hollywood, having learned his cinematography in the studios of the Film Capital. He has been in Argentina several years and is the pioneer cameraman of that country. There he is known as "Tecnio de Luz" which is Spanish for "first cameraman" or "the technician who does the light."

"ETHIOPIA" IN 16MM FILM

The first new single-reel 16 mm. motion picture subject on Ethiopia, sound-on-film or silent, is announced as available for sale or rental by the Library Division of the Bell & Howell Company. This timely and vitally interesting film portrays the nature of the country and the intimate daily life of the people. The sound narrative, entirely free from forced "wisecracks", provides an intelligent, fair, and unvarnished presentation of Ethiopian history, population, form of government, economic peculiarities, trades, religions, and many other points of interest.

It is not a transitory "war" film, although thousands of tribesmen, afoot and on horseback, are

caught by the camera, and the problems of providing food for a vast army are drastically portrayed. A high spot of the film is the raw-meat-eating ritual of courage, practiced by the army on the eve of its departure for battle, under the watchful eye of the Emperor. The photography, of intense interest and high educational content is by Burton Holmes, world-renowned traveler.

The sound version can be rented through FILM-OSOUND rental libraries. A silent version, with copy of the narrative text supplementing a minimum of titles, will also be available. Both sound and silent versions can be bought through Bell & Howell.



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Jesse Lasky Foresees a Cycle of Operatic Films; Pickford-Lasky Ready For Production

Repeated predictions that television had been perfected to the point where it is destined soon to become a home-entertainment comparable to radio, making it a threat to the motion picture industry, are scouted by Jesse L. Lasky, president of the recently formed Pickford-Lasky Productions, Inc., at United Artists' studios.

"Perhaps some day," says Mr. Lasky, "but not yet! The audience-instinct is still too strong among the rank and file of people. They prefer to enjoy their major amusements en masse.

"The crowd generates enthusiasm, which one misses by himself. Who wants to listen to the details of a football game, if he can join the spectators, to cheer and suffer with them? Thus you make yourself part of the drama, almost as much as the players. Moreover, when you applaud a performance you want someone to applaud with. There is little incentive to do so by yourself."

Mr. Lasky opines that when television reaches that stage of mechanical perfection, where productions are broadcast from a central station to scattered theatres for audience reception, it may give the motion picture industry something to worry about. "But that, it seems to me, is still in the dim and distant future," says Mr. Lasky, "in spite of the undoubted progress television is making. However, I do not see it as a menace to the picture industry in 1936."

One of the developments during the New Year that Mr. Lasky does look forward to expectantly is a more intelligent use of music, as applied to the telling of screen stories. "By the creation of a new musical technique," he says, "I believe the international appeal of motion pictures, which received a temporary setback when the screen became audible, can be enlarged.

"I do not mean to imply by this that we are in for a cycle of operatic films—pictures dominated by

music. What I really foresee is a more discriminating use of music, to the end that screen-stories may be unfolded more understandingly, in much the same way that sound and dialogue have advanced cinematography, in recent years."

Mr. Lasky makes this forecast, not theoretically, but as a practical musician—one who knows and loves music as a moving force of general appeal. He got his original start in the amusement world as a musician and has never lost sight of the unfailing lure of melody and rhythm for the public-at-large, as entertainment.

"Granted that comedy and the emotions speak convincingly to most people everywhere," Mr. Lasky points out, "music is generally conceded to be the universal language best understood among civilized nations. Such being the case, I feel there is room to use it to still better advantage; and I look for definite progress in that direction, during the year 1936."

Pickford-Lasky's program in the New Year calls for the production of four pictures, all made for the world-market. The first will be "One Rainy Afternoon," starring Francis Lederer. It is a romantic comedy. Lederer will sing in it for the first time in his screen career.

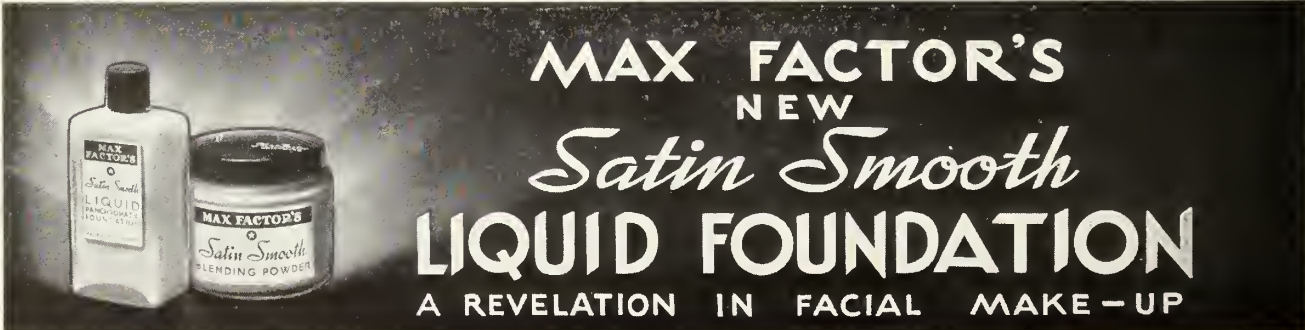
As part of the policy to cultivate the international market, at least one production will be made abroad annually. The first will most likely be done in Great Britain, with Nino Martini as soon as he finishes his current operatic season at the Metropolitan in New York. It will naturally be a big musical production.

The association of Mary Pickford and Jesse L. Lasky is regarded as a most fortunate one, as both desire to produce outstanding motion pictures, off the beaten path. Variety will characterize their output, no particular type of story being preferred, save that it must be entertaining as well as significant.

GROWING INTEREST OF FOREIGN COUNTRIES IN GERMAN FILM PROCESSING MACHINES

As reported in business circles, exports of German film working machines have considerably improved during the last few months. Detailed export figures could not be obtained, since this machinery does not represent a statistical group of its own. It has been learned that this improvement has included principally developing and copying machines. Com-

petition with foreign producers of similar machinery is said to be very sharp. In spite of this competition, it is reported that German manufacturers have succeeded increasing sales of their product in Holland, Austria, Italy and Spain, and also to some extent in the Argentine and in Brazil, reports Acting Commercial Attache Douglas Miller from Berlin.



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A REVELATION IN FACIAL MAKE-UP

New Arc Lighting Equipment to Rival Incandescent Lights for Studio Sound Picture Illumination

[The designers of the equipment herewith outlined have brought their product to the point of commercial distribution and further announcement regarding the new equipment will appear in the February International Photographer.—Editor's Note.]

Today the designers of arc lighting equipment for use in the modern studio for illuminating sound picture sets are faced with the problem of producing arc lamps which will equal incandescent lamps in light, weight, silence of operation of both arc and mechanism and dependability in burning.

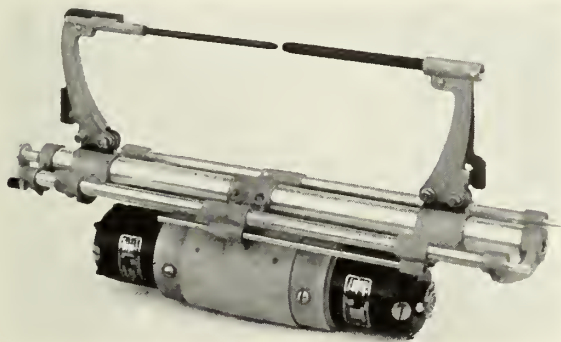
Having set about the task of so designing an arc the designer will be obliged to adopt a radical de-

fact such high efficiency may have to be secured by the use of a reflector that the current consumption now becomes less than half that formerly required, while the light emission steps up amazingly, the arc proper becomes small, cool and extremely steady and quiet and light distribution on the set very smooth and even.

Now having reduced the current to less than half the designer finds it possible also to reduce the total of the lamp weight by more than half, a step which readily may be understood when it is realized for instance that the weight of the ballast resistor, or grid, is proportionate to the current it must carry, also the cable and thus all the other parts. The final step is the building into the new lamp those recently developed but widely used aluminum alloys by which weight of housing and stand become just one-third that of former lamps using iron or steel. Not the least of the satisfaction gained from the use of the aluminum alloys is the knowledge that the housing for the new lamp undergoes no deterioration from internal heat nor extreme weather conditions.

The above illustration shows the arc control and element which has been perfected for holding and feeding carbons for the new light weight arc spot lamp. Proper design here has resulted in a perfectly noiseless mechanism which strikes and feeds the carbons into the arc with such precise fashion as to produce a stable arc flame rivalling the incandescent in steadiness.

A valuable feature is the long burning resulting from proper selection of carbon. By properly positioning these carbons the new lamp will operate without aberration through an entire day's shooting.



Arc Control and Element of New Light

parture from former types of arcs. The old arcs have been characterized by low efficiency and great weight and a multiplicity of parts.

High efficiency of light collection and distribution present no problem providing the designer takes advantage of highly perfected mirrors which are already used in the other types of arc equipment which although standard in theatre projectors have not as yet found their way into studio equipment. In


Automatic Sound and Picture Printers

The last obstacle to the reproduction in theatres of startlingly realistic talking motion pictures has now been removed, according to statements recently issued by leading Hollywood executives. For several months, cameramen and sound engineers have been producing sound films of extraordinary quality, but these master films could not be duplicated without serious losses in sound and picture value in the hundreds of copies needed for theater circulation. At a cost of over \$375,000, Metro-Goldwyn-Mayer, Paramount, and Columbia Pictures have contracted for the installation of new duplicating equipment known as Automatic Sound and Picture Printers.

These printers were developed in the Engineering and Research Laboratories of the Bell & Howell Company, Chicago, and have been perfected as the result of five years of development work costing \$300,000.

Both the picture and the sound track are automatically reproduced on these new machines at one operation, retaining all of the depth and definition of the original film and without loss of the full range of the recorded sound. As a result, pictures are now being released combining such photographic excellence and faithful sound reproduction that the most critical audience will be free to enjoy the new films as pure entertainment without making allowances for losses due to imperfect printing.


Unlike the printers formerly used, the new machines are entirely independent of the skill of the operator. Although running at higher speeds, these printers are equipped with interlocking controls and safety devices which make them entirely foolproof. They will stop instantly and automatically in case of film breakage, lamp burn-outs, power-line variations, or failure of the air-supply lines which vacuum-clean the film while it is being run. Film waste is thus entirely eliminated.

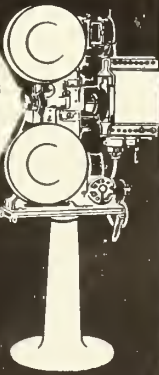


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TELEVISION AS A PROFESSION

(Written Especially for the Readers of The International Photographer)

By HARRY R. LUBCKE

Director of Television of the Don Lee Broadcasting System



ANY young men and those in allied fields are interested in television as a profession. The following notes are intended as a guide for those who are interested themselves, or for those who may have a young man that they want to guide vocationally.

At the present time television is almost wholly a technical endeavor. It goes without saying that the prospective employee must therefore have a technical education.

It is well that a man examine himself to see if he is suited for technical work. Such work, in its higher aspects, calls for continuous exercise of creative imagination, and offers no opportunities to those who are mentally lazy. As a boy, the candidate should have shown a desire to make and understand things rather than to use and break them. The former attribute is the first manifestation of the creative instinct, which, in a somewhat broader way, is a requisite for executives as well as for technical men. To use and break things signifies a desire to operate and consume. Operating work, such as the operation of office machines, technical equipment, street cars and other things, is comparatively easy on the brain, but not always easy on the nerves. We are all consumers, but no one is paid to consume.

After the usual grammar school education, the candidate's high school training should be along scientific or engineering lines, preparatory to similar work in college. It is not particularly important that the young man secure top grades. Most important is an enthusiasm in his chosen work and the habit of carrying through difficult tasks to a conclusion. His grades in the subjects akin to his profession should be high, otherwise the profession has been wrongly chosen, or a lack of ability is indicated. If the student secures excellent grades in all subjects, a high natural ability or the will to make a success of all things, including those essentially distasteful to him, is shown. A generous portion of this last attribute can never be amiss, for in later life the greatest rewards go to those who have the ability to bring pleasant solutions out of disagreeable problems.

It is important that the young man engage in extra curricula activities, particularly during the high school and college years. This brings into his nature an initiative, a self-reliance, and a spirit of cooperation, which is absent in purely academic work. Extra curricula activities should not provide a means of mental escape from the rigors of academic training, nor should the mere accumulation of knowledge crowd out a proper exercise of what might be called playing hookie from studies.

It is possible to engage in television work without a college education. A trade or correspondence course taken at the completion of high school will fit a student for television work. In this case an extra portion of initiative and natural ability is necessary to compensate for the lack of mind training and knowledge secured in college. In Los Angeles, trade school training can be had almost for the asking through the facilities of the Frank Wiggins Trade School. This school is operated by the Board of Education of the City and the fees are very small. In following this path, the young man can secure a job in a radio receiver factory, a radio service organization, or in similar enterprises where it is possible to enter as an apprentice and learn while working. His work must be supplemented by intelligent reading of the higher professional periodicals, such as the Proceedings of the Institute of Radio Engineers, and by study of modern text books on radio, electronics and physics.

If it is financially possible, a complete college education in engineering or physics is the best entree to the field. A student should enroll in the College of Electrical Engineering, and specialize in communications engineering, or in the College of Physics, and specialize in electronics, in any of the large or accredited

universities of the country. Four years of work leads to a bachelor's degree. This forms an excellent foundation technically, economically, and culturally if the student has applied himself with a determination to learn something, rather than making an effort to slide through an ordeal as easily as possible.

For pure research work a Master's or a Doctor's degree, secured after a total attendance in the University of five or eight years, respectively, is desirable. This specialized training is not required for the broader aspects of television work, in fact, it may tend to cramp the mind into purely technical channels. It is an extremely useful tool of the out-and-out research scientist, however, unless it makes the man too conservative and unwilling to try the untried.

Having completed his formal training, it is necessary that the candidate be fitted for jobs available in the field if he would be employed at once. It is desirable for him to obtain a radio station operator's license from the Federal government. The radio telephone second class, or better, the first class grade is required. This license is issued by the Federal Communications Commission and is obtained by taking a government test which is given in any of the large cities of the United States by the resident Radio Supervisor. It embraces the theory and operation of radio transmitters, as well as the International Regulations on distress signals, secrecy of messages, etc. Such license is required by Federal Law for the operation of television and radio transmitting equipment, and this is often included in the duties of the young television engineer.

Should the candidate be particularly interested in television receiver manufacturing field, the best preparation for this work is employment in existing radio receiver factories and at a later date, of course, employment in television receiver factories. A Federal license is not required for this work.

The present positions in the radio field throughout the country embrace the posts of director of television activities, television engineer, television operator, and television technician. It is for one of these positions that the above requirements have been set forth as a prerequisite. This group of positions will gradually expand to include the television continuity writers, program directors, producers, advertising salesmen and executives.

The best training for television continuity writers is previous radio and motion picture continuity writing experience, with as much of a grasp of the technical aspects of television as can be acquired. Program directors and producers are best trained in the radio field, for in live subject presentations there are no "retakes." Motion picture experience is, of course, valuable, and in the production of motion pictures for television it is most important. Motion picture cameramen will continue as such, photographing simpler productions according to new requirements for television motion pictures, or leave their field to engage in one of the other activities here mentioned. Advertising salesmen will, of course, sell sponsors television programs, and for such work advertising agency or radio sales staff experience is the only preparation.

The executive will come from any of the above mentioned branches of the television field, often to be those who entered the field early or who are already in it. To be a well rounded executive requires that the man have worked, or have a very intimate experience, with all the divisions of the industry. At the present time fantastic misconceptions about television reside in the minds of some, who are now executives in other fields of endeavor. Technical training is the only thing that will set these people aright, whether it is gleaned from conversation with those in the industry, or learned from text books in private. That a technical training is suitable training for such positions is evidenced by the presidency of David Sarnoff of the Radio Corporation of America, who started life as a ship radio operator.

REFERENCES

In order to make this discussion as practical as possible a list of periodicals and books is here given. The first reference in each group has been listed as most suitable for the beginner and for the person

who wants the most information for the least expenditure. The other references follow in the order of need to one more and more deeply interested in the art.

(Continued from Page 26)

A. Periodicals.

1. "Proceedings of the Institute of Radio Engineers," monthly, The Institute of Radio Engineers, 33 W. 39th St., New York City. Particularly the December 1933 and November 1934 issues \$1.00 per copy to non-members). Membership in the organization can be secured by responsible interested persons. Dues vary from \$3.00 to \$15.00 per year depending upon the grade of membership. For information write to the Secretary at the above address.
2. "Electronics," monthly, McGraw-Hill, 330 W. 42nd St., New York City.

B. Pamphlets.

Cathode-ray Tubes and allied Types, Series TS-2, RCA Radiotron Division; RCA Mfg. Co., Harrison, N. J. (25c)

C. Books.

1. "Radio Engineering Handbook," Henney, **Second Edition**, October 1935, McGraw-Hill. This one up-to-date volume gives more radio-television information than any other book.
2. "Television" Felix, McGraw-Hill. This gives the background and history of television and discusses the program, entertainment, and commercial aspects.
3. "Measurements in Radio Engineering," Terman, 1935, McGraw-Hill. This gives the measurement and laboratory technique required by the prospective technical

employee. Thirty-two experiments are found in the back of the book.

4. "Experimental Radio Engineering," Morecroft, Wiley, 440 4th Avenue, New York City. This contains fifty-two experiments, which comprise the book.
5. "Radio Operating Questions and Answers," Nilson and Hornung, Fifth Edition, McGraw-Hill. This book gives all the information required to pass any of the United States Government examinations for a television (or radio) station operators license.
6. "High Frequency Measurements," Hun, McGraw-Hill. This is an advanced work, giving valuable data on a wide variety of measurements and measuring technique.
7. "Photoelectric Phenomena," Hughes and DuBridge, McGraw-Hill. This advanced book on photoelectric cells furnishes excellent instruction for television research workers to do.
8. "Higher Mathematics for Engineers and Physicists," Sokolnikoff, McGraw-Hill. This is an advanced work intended to assist the research engineer in understanding the mathematics found in advanced books and in the advanced papers appearing in the "Proceedings of the Institute of Radio Engineers," and similar publications.
9. "Inventions, Patents, and Trade Marks," Wright, McGraw-Hill. This gives information on patent practices and is useful to either the executive or research worker.

WHAT IS HOLDING UP TELEVISION?

(Continued from Page 7)

of the wires were under any great tension, but were given a natural period corresponding to the frequency at which they were intended to oscillate. He hastened to add: "The wires not being under a great tension, are not subject to crystalization or fatigue, hence have an extremely long life, at least longer than any radio set so far built." Also he said: "Being that a torsional form of vibration was employed, instead of a rotating-resolution, it could be kept under a positive control at the receiving set at all times by the master oscillator at the transmitting station."

This, of course, is something that has not been approximated so far by any mechanical system of scanning. The overall dimensions of the unit occupies a space of two by five by eight inches and weighs about ten pounds. Incidentally, the manufacturing cost is said to be much lower than any system yet devised.

Doctor De Forest's explanation and remarks regarding the optical light control, were also very interesting in their practical aspects. The modulation of the light which builds up the image on the screen by the flying spot is obtained by the electrical incoming variations acting upon polarized light. This light control principle is not new to television, but it has been greatly refined in recent years.

It makes use of what is known as a Kerr cell, the operation of which is a beautiful example of the electro-magnetic nature of light. Its electro-static nature was first studied by Dr. Kerr, of Glasgow, Scotland, about 1854. Doctor De Forest was very assuring that these cells are now a practical article.

They are absolutely without inertia and have no moving parts, are fool proof and have a low construction cost. The only replacement cost encountered is in the life of the projection lamp, which is around several thousand hours, and they may be purchased anywhere at a nominal price.

However, to complete the description of the scanning system, use is made of proper lenses to concentrate the light from a 200 watt projection lamp through the Kerr cell and on to a metal scanning mirror where it is reflected through an objectifying lens to sharpen the spot and then on to the screen.

Consistent with what Doctor De Forest outlined

in the beginning as practical television requirements, the amplifier employed by Mr. Priess is greatly in advance of the average television amplifier and it has been developed by him over a long period of years.

Some of this work has been done by Mr. Priess while with the United States Government, especially in connection with what he calls an "untuned" amplifier. This amplifier has no peaks or any form of emphasis throughout the entire television frequency range, which assures a perfect transmission of the image variations.

Doctor De Forest concluded by saying that Mr. Priess had taken out patents in foreign countries as well as here and that he has exclusive rights in the United States on "untuned" amplifiers, which are to issue shortly, as property of the United States Government. The scanning system is also thoroughly protected here and abroad. Mr. Priess is now preparing to manufacture these sets at a low market price, within the reach of the average income.

HEAD STILLMAN MARION IS BUSY

Still Cameraman Art Marion has returned from location where he shot the stills for Buck Jones, starring in "Silver Spurs," Picture No. 10 of Universal release. Direction, Ray Taylor; Mike Eason, assistant director; Allan Thompson, first cameraman; Herb Kirkpatrick, operative cameraman; Edward Jones, assistant, first unit; Joe Lykens, assistant, second unit.

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HOLLYWOOD STUDIOS USE THEM IN EVERY PRODUCTION

SOME DATA ON BUILDING A TITLE BOARD

(Continued from Page 16)

best determined by test. It is well to spend as much time as is necessary in checking these guide lines, for once determined they can always be depended upon when you come to making your titles.

Exact focus between your card and camera lens, at such short distance, is usually obtained by unscrewing the lens slightly from its mounting. Again, it is necessary to make tests to determine exact focus.

The next consideration to be met in building your own title board is the matter of lighting the card for exposure. In this respect, there are three choices: Ordinary daylight, Photoflood bulbs, and Projection type bulbs, which we shall discuss in order.

Ordinary daylight, there can be no doubt, is the cheapest and the simplest lighting source. But in the matter of lighting when you will want to make titles at any time during the day or night, nature's own light is not the most convenient source to depend on. Besides, you can never get constant results in exposure, which is an absolute requisite in photographing any title matter.

The Photoflood bulbs are quite ideal. Their light is brilliant and efficient, and their first cost is very low. They also possess an advantage in that they may be burned in any position, which is a matter to consider, for you may some time desire to tilt your entire title board when employing movable letters on your title cards for purposes of animation. The only slight drawback of these bulbs, from the view point of service, is the short life of the Photoflood if you will be making a great number of titles.

The Projection lamps, for example the 250 watt type, are equally ideal for lighting a title board. They must, however, only be burned base down; tilting them to any great degree will cause them to burn out prematurely. Projection lamps possess the advantage of longer life than Photofloods; and though their first cost is somewhat higher than the Photoflood, replacements are few and they deliver fine service.

Whichever type of artificial light source you choose, Photoflood or Projection, reflectors are essential. As the lamps will be permanently mounted to the title board, the reflector not only will give fullest efficiency to your light source, but more important, they will cut off any extraneous light rays from the camera lens. Perfect positioning of the reflectors, it must be noted, will leave the taking lens in shadow.

The permanent mounting of the lamp sockets on the title board can only be determined by test. Generally speaking, the lamps should be practically even with the camera lens and to each side of it, on a small title board. In no case may there be any trace of a "hot spot" on the title card. The lighting must be very even, each lamp socket being equally distant from the title card frame.

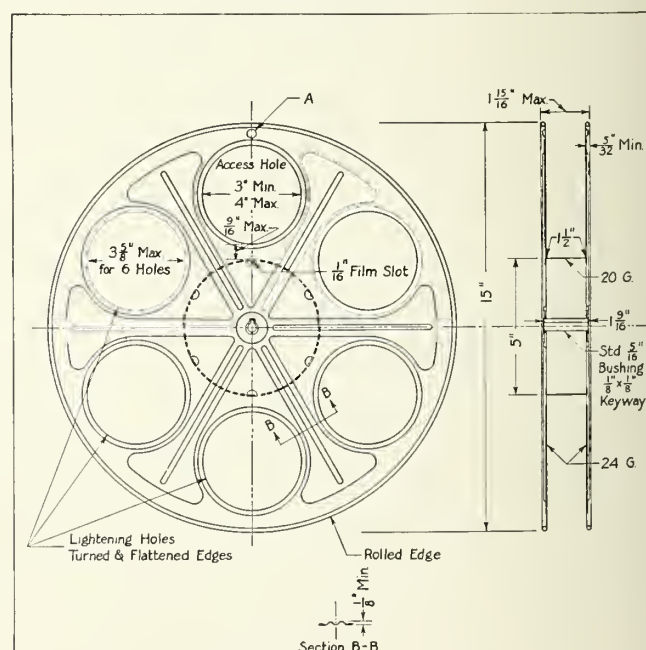
A toggle switch, controlling both lamps, should be mounted at some convenient location on the title board. Usually this will be near the rear of the board, and near to the operating button of the camera. A female supply plug is also attached to the board. In some instances, it may be found convenient for purposes of focusing, etc., to light only one lamp at a time. This may be accomplished with

pull-chain sockets, holding your lamps, making them independent of each other.

Whether you will want to make your titles fade-in and fade-out will depend upon what film you will use. Ordinary positive titles (quite often called, direct) can not have fades imparted to them. However, there may be occasion when you will be making negative titles, or titles on reversal film, in which case fades can be obtained. It is advisable, therefore, to equip your title board for any such instance. Probably the easiest way to secure fades is by the so-called "fading glass." This is a glass slide, clear at one end, which gradually darkens into perfect opacity at the other. Since, in the operation of the "fading glass," it must be passed in front of the camera lens while the latter is in operation, your fades will be far less subject to any possible error if a guide is provided to accommodate the "fading glass." This guide may be fashioned of metal or wood. It should be permanently attached to the base of the title board, so that it will hold the "fading glass" at the center of, and just clearing, the camera lens. This guide, or holder, will permit smooth action of the "fading glass", thereby greatly improving the quality of your title fades.

The final touch to your home-made title board should include one or two coats of a good shellac, applied to all wooden surfaces. Should there be any reflection from the title card frame, due to its relatively close proximity to the lighting units, the frame should receive a coat or two of flat black paint. This will produce a dull black finish which will "kill" all reflected rays.

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IT HAPPENED ONE DAY

(Continued from Page 17)

ond magazine of film was exposed without further mishap.

"With one negative worth developing I turned to the problem of processing when I arrived home. Again it was in the cards I was to come to grief. From some old discarded wood, I constructed a single developing tray. You see, in those days, you **made** what you needed. I had an awful time making the tray liquid-proof; guess I used oil cloth, paraffin and tar before the tray quit leaking. As the tray would only accommodate approximately 50 feet of film, I had to proceed to slice up my exposed 165 feet; spliced film didn't mean anything in those days. Next I needed a film rack on which to place my 50-foot lengths of negative. This I made of wood, the rack being the cross-rack type, with separation pins made from common nails. Probably if I'd ended there everything would have been okay. But an article on film developing came to mind and, following its suggestion, I tarred the rack. The job was done neatly but all too well. Developing the negative was some job! Having but a single tray to work with, one had to work fast—and when I say fast, I **mean** fast! I had to dip the rack, with the film wound on it, into the developer, then pull it out and dump the solution; quickly refill the tray with water to wash the film, then dump the water; refill the tray with hypo, fix the film, then again dump the tray; and lastly again fill the tray with water so that the film might receive its last immersion. And I had to repeat this process every fifty feet! As a told you before, my job of tarring the rack had been done neatly but all too well, as I soon found out right after my first length of film was processed. For when I tried to remove the negative from the rack, it wanted to remain! Trying to get it off was worse than engaging in a taffy pulling contest. The negative was certainly tarred, if not feathered, yet in the end I pried it loose. Don't ask me how I ever cleared the film of the tar, I only know I finally succeeded.

"There still remained the necessity of a print. This proved a difficult problem until, removing the mechanism from the camera box, I decided the mechanism would serve as a printer. An old wooden cracker box, lightproofed with film tin tape, became the container for the printing light. The rays of an ordinary lamp bulb passed from a small hole in the side of the container and then onto the aperture of my makeshift printing machine—thus I made my first print. What light changes there were in making the print were accomplished by varying the cranking speed of the printer. Believe me, it took some maneuvering of that home-made printer to prevent the positive strip of film from being exposed in the wrong places.

"Then came the night of nights . . . when I was to exhibit my first movies to a group of friends and neighbors. On an old Powers projector, recently resurrected from the junk pile, and equipped with an arc lamp. Careful not to overload the ordinary house fuse circuit, I'd cut into the power line ahead of the fuses. The sputtering arc finally lit up with a glare, and I started cranking the old Powers. At last, my show was under way despite all difficulties.

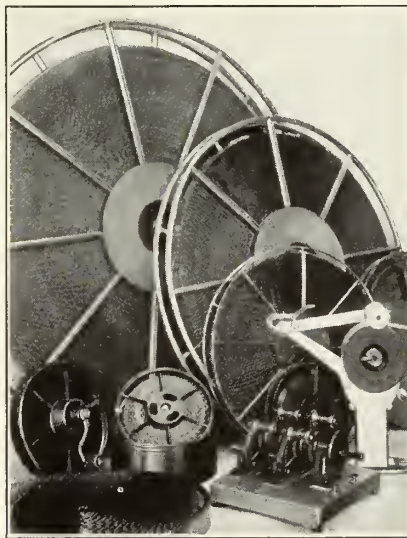
"Not fifty feet had passed by on the screen when there came a loud rapping at the front door. Who could it be?, I wondered. The knocking became more

determined . . . I must see what was wanted. Opening the door I was confronted by an extremely excited old German neighbor from next door. He was tense. He pointed excitedly in the direction of the main power wires, running from the line to my home, as he exclaimed: 'The wire, **red** from the houze midt the pole!' Sure enough, he was right, the wires were redder than red, the arc lamp was proving too much a load. My show was **over** for that evening! And that's the story of my first movie making experience . . ."

Art had hardly finished speaking when his remarks were interrupted by a loud cry of distress from the direction of the laboratory. There was an unmistakable sound of a great splash, followed by a great rush of water from the developing room, as we both dashed towards it. But before we could reach the door, the victim slowly emerged. What a sight greeted our eyes! There stood Jack, the assistant lab man, dripping wet, soaking from head to foot! With a sheepish grin, Jack explained: "I was only adjusting the safe lamp and climbed onto the wash tank," he sputtered, "guess I slipped in!"

Midst our roar of laughter at Jack's rather moist condition, Art turned to me and exclaimed: "This just goes to prove what I've been telling you—**anything** can happen in the film game!"

And so we prepared Jack for the drying room.



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HOT POINTS

By WILLIAM KISLINGBURY

THE average visitor to Hollywood, fortunate enough to gain admittance to a studio lot, usually ventures to express an amazed incredulity at what appears to him a needless waste of time and materials on the part of the personnel and management in picture making. One interested in psycho-analysis can form rapid and fairly accurate conclusions from the observations and reactions of these visitors placed in his charge.

Experience has taught me to discreetly detour from the vicinity of our huge continually blazing incinerator when escorting the practical minded sight-seer. Such a display of wanton incendiarism has not always been a practice within the studios, but because a few greedy workers incorrigibly took advantage of their permission to haul away discarded material by hiding valuable properties among the junk pile, this privilege to the employees had to be definitely and permanently rescinded. This is by no means pleasant to explain to our guests,

Of the thousands of visitors shown through the studios each year a very few indeed ever reach or even know of the existence of the most practical and interesting department of the motion picture industry, the Lab. It is to this department I resort for any necessary refutation of inefficiency or waste and I have yet to find the practically-minded person the laboratory has not intrigued and convinced. There is something extremely fascinating about the work of a dark room and the wizardry and magic in trans-

forming light rays to captured images. Everything may be at a standstill on the stages as production is held up for one cause or another, but the laboratory works on schedule with an incessant rhythm and an alertness for any possible error which might destroy efficiency.

It is rather difficult to explain the intricate procedure of laboratory methods, and one can only be discursive in enlightening a layman, but once they have held a strip of film in their hands and examined it, tested it for strength and shown how easily it can be torn, the guide acting then as mentor need only answer eager questions. From the 80 mil strip of modulations forming the sound track enough inquiry can arise to tax the mentality of a professor. When hard put, I have found an immediate remedy by pointing out the operations of a splicing machine. More curiosity is expressed regarding the manner in which films are welded together than of any other task in the industry. Splicing seems to be an answer to a great mystery in peoples' minds and explains simply how motion pictures are edited into story telling continuity.

A tour down the long row of overspeeding projectors of the inspecting room (which is positive proof that the multiple feature bill has always been an institution within the laboratory) and our practical minded guests are quite satisfied that efficient, practical methods do exist within the motion picture industry, yet it took to convince them, an extra added attraction.

SOVIET MOTION PICTURE INDUSTRY

By V. I. VERLINSKĀ,

(Reprinted from S. M. P. E. Journal by request.)

THE motion picture industry of the Soviet Union is essentially a growth of the past ten years, but, if I may say so, a substantial and healthy growth. During the czarist regime the industry was insignificant, most of the films being imported from foreign countries. When the Soviet Government came into power in 1917, it found itself in possession of two small studios which represented the entire productive equipment of the country.

Conditions during the next few years were not conducive to the expansion of the industry. The few films made during this period were documentary records of important events during those stormy days, perhaps of no great artistic pretensions, but of increasing historical importance. It was not until the close of the period of civil wars and invasions that the country was in a position to build up the motion picture industry. During the past decade the growth has been rapid. Today there are over ten studios, located in Moscow, Leningrad, Odessa, Kiev, Yalta, and other centers, and the country has become one of the most important world producers. There are upwards of 30,000 theatres, and the attendance at performances was over 650,000,000 last year. In addition to motion picture schools for the development of its artistic and technical staffs, the industry has its own academy and a special research institute.

The days of the silent pictures brought to the fore some great masters and some great productions, which commanded artistic admiration and respect far beyond the Soviet borders. Eisenstein's "Potemkin" and Pudovkin's "Mother" were among the pioneers in these great works, and others outstanding in this period included Dovzhenko's "Soil" and "Arsenal" and Pudovkin's "Storm Over Asia" and "End of St. Petersburg."

The transition from silent to sound pictures has been a peculiarly difficult one in the Soviet industry for many reasons, not the least of which is the fact that the Soviet Union is composed of 182 different nationalistic stocks speaking 150 different languages and dialects. Obviously the creation of talking pictures for such a polyglot population presents special problems. . . .

The Soviet studios are working beyond their capacity. For 1935, 150 full-length pictures will be produced, in addition to many short subjects and news reels. The most recent efforts of the Soviet film industry tend toward a mastery of film technic result-

ing in a finished product of great art. Such films have already been made and have received universal recognition, as was shown at the International Motion Picture Exhibition in Venice, where the Soviet Union was awarded first prize as the producer of the world's most artistic films.

The motion picture industry of the Soviet Union has been developed under the aegis of the government. Each of the seven constituent Republics of the Union has its own motion picture industry, operating under the People's Commissariat for Education of the Republic in which it exists. The whole industry is combined in the Motion Picture Trust of the U. S. S. R. It is the problem of each division of the industry to satisfy the public in its territory.

All the silent films produced have to be released with titles in some 150 languages, to accommodate the entire polyglot population of the Soviet Union. The talking pictures are made in ten principal languages, and have superimposed titles for the various minor linguistic groups. In this respect the Soviet industry is faced with a complication that does not affect the industry in the United States.

All the newsreels in the Soviet Union are under the control of the newsreel trust, Soyuz filmnews, which takes care of the entire territory of the U. S. S. R. Every month Soyuz filmnews issues three silent newsreels of general interest, three sound newsreels of general interest, two shorts on village life, a special short devoted to children, one on science and mechanics, one on art, and one on national defense. In addition, Soyuz filmnews participates in all scientific expeditions, and in this line has produced films of such expeditions as those of Sibiryakovs and the Cheliuskin and the exploration of the desert Kara-Kum. The trust has over 100 news cameramen scattered over the Soviet Union. The aim of Soyuzfilmnews is to install a system similar to that of the American newsreel companies to enable them to have the newsreels in the theatres 24 hours after being filmed.

All the scientific films are produced by a special scientific trust, which is assisted by the leading scientists, those of the Academy of Science of the U. S. S. R., including the famous physicist Pavlov. In 1933 the trust issued 107 silent short subjects and only three sound; in the first nine months of 1934 there were 177 silent short subjects and 24 sound.

It is only lately that the Soviet Union has begun to develop its own manufacture of raw stock and equipment.

By
**Robert
Tobey**



CINEMACABONI

(With sauce for those who like it.)

HOLLYWOOD HONEYMOON

(A novel novel of a thousand and one nights
in a daze)

By
R. THRITIS

Synopsis of preceding chapters, for you dopes
who can't remember anything overnight.

Lili Liverblossom, long on beauty but sold short
in the engine-room, is a famous screen star on
the wane. She has for her Public Relations Coun-
sel the trigger-witted

Perriwether Murgle, young and handsome press-
agent extraordinary. In the line of duty Perri is
carried off to the eyrie of a huge Bald Eagle
named

Willy Nilly. Here in the Eagle's lair Willy
Nilly's wife.

Nelly Nilly, makes googly eyes at Perri, and it's
getting pretty hot for our little friends. Mean-
while

Bill, a writer, has just sent a ghost over to Lili's
apartment. Lili has flung out, with her Einstein-
like brain, that a ghost can help her find her lost
Perri. As we raise the field-glasses to our eyes,
Lili has just been making friends with the ghost
and preparing to leave in search of Perri. Now
it's your turn at the peepsight.

CHAPTER XV.

Over the Hills and Far Away

"And now to the rescue!" cried Lili.

"The Rescue?" repeated the ghost inquiringly,
with a touch of interest in his voice. "What is it,
a new Night Club?"

"Certainly not!" snapped Lili. "It's a Boy Scout
deed. Didn't Bill tell you what he made you up
for?"

"He didn't even tell me he made me up," said
the ghost. "He just sent me over here in a hurry.
I thought maybe it was Halloween."

"Giblets!" exclaimed Lili. "Then I'd better tell
you the story." And she told him the story.

"... and Perri is probably a prisoner by
now in an eagle's lair," she sobbed in conclu-
sion.

"What you need is an eagle's ghost, lady,"
said the ghost with a sigh. "And a couple of
handkerchiefs," he added hollowly as Lili's tears
dripped into an old straw hat she had placed on
the floor to catch them.

"Do you mean you can't help me?" asked Lili
pitifully, looking up, her big blue eyes dark with
sorrow.

"Oh, I guess we can find some way of rescu-
ing your boy-friend," the ghost answered.

"My press-agent," corrected Lili.

"Don't quibble," said the ghost.

"I can't help it," said Lili. "I itch."

"Grab hold of me," commanded the ghost,
"and we'll be off."

"Do you mean you're going to carry me?"
asked Lili.

"Certainly," said the ghost. "Did you think
we were going by bus?"

"How fast do you generally go?" asked Lili
dubiously, stepping forward hesitantly.

"I can be anywhere in a second," said the
ghost. "But I can't go that fast if I'm taking you.
You'd melt. So I'll just sort of mosey along.
Come on, hang onto me."

Diffidently Lili clasped her arms around the
ghost's waist. They went right on through and
she found she was merely hugging herself. She
put her arms around him again, with the same
result.

"My, but you're flimsy," said Lili exasperat-
edly. "What do I do now?"

"I guess I'll have to grab hold of you," said
the ghost and, suiting action to words, he picked
her up in his arms as if she were a feather and
immediately began to rise in the air and float
off across the city. In no time at all he was up
to sixty or seventy miles an hour. To Lili the
sensation was that of being transported on a
cloud or an infinitely soft pillow. The moon had
just come up over the Hollywood hills, and the
stars were sparkling and flashing in the cold
crystalline air above the city.

"Looka here," said Lili. "If you're going to
romp on it like this, you'd better take me back
for my fur coat. I haven't got my red flannels
on, you know, partner."

(How will the ghost take the wise-cracking Lili?
And where? Will they reach Perri in time? And
what of Lili's career? Any fool can ask questions
like those. So I guess any fool can answer them.
See next month's installment of this super-serial.)

Mad Hattie says that stenographers with weak
eyes must find it very trying, typing on onion-
skin paper.

DAILY INCONGRUITY

A man walked up to an office boy on the
Columbia lot and borrowed a dime from him to
buy a magazine.

The boy turned to a fellow-worker when the
man was out of earshot. "That's the writer,"
said he, "who is working on the story, 'Millions
To Spend!'"

KNEECAP REVIEWS

(I have my thumb in my mouth)

"PETER IBBETSON," with Ann Harding and
Gary Cooper. Here is a picture so superbly con-
structed that it brings an ache to the heart. Hav-
ing nothing but praise for the picture, I am pained
to aver that it will not be a box office hit. I fear it
is a little too fine for the average public taste and
comprehension, but hope I am wrong.

Praise falls equally on all heads in this produc-
tion. Ann Harding will never look more divine
than she does in "Peter Ibbetson." Judged by
this picture alone, Miss Harding would be the
most beautiful woman on the American screen.
The subtle direction of Henry Hathaway was a
thing of beauty. Great credit must go to the one
or ones who evolved the interesting, beautiful, and
thoroughly satisfactory method of handling the
dream transition sequences. Ann Harding's act-
ing is as impeccable as her appearance, and al-
though Gary Cooper's touch is not quite so mas-
terful, on the whole his part is well handled. John
Halliday, Virginia Weidler, Douglas Dumbrille,
and Dickie Moore play their small parts well.

If you doubt that the screen can adequately con-
vey an idea with a truly haunting and ethereal
beauty, see "Peter Ibbetson" and grovel in objec-
tion.

"DR. SOCRATES." Interesting chiefly because
it puts Paul Muni into a type of role that he
has not handled before. Some say he is pretty
bad in the role of the brilliant medical student
turned country doctor for personal reasons and
embroiled in gangland didoes for reasons beyond
his control. Some say he is excellent.

I'll take vanilla.

Ann Dvorak should have stayed home when
they called her for this production. She is poorly
photographed and has a part that is quite thank-
less.

The film is fast moving, and especially is inter-
esting if you like anti-gangster films.

"THE LAST DAYS OF POMPEII." This is mostly
Preston Foster, and if his fan-mail from love-lorn
ladies doesn't jump a thousand fold after this
epic I'll pop my gum. It's a he-man tale of
blood-letting among the Old Romans, and don't
see it unless you have a strong stomach. Prac-
tically all of the then means of sudden death are
graphically illustrated.

Basil Rathbone portrays Pontius Pilate with a
master's touch, and Gloria Shea does well with
a casting crumb thrown her way.

"I LIVE MY LIFE." Since Joan Crawford can
practically write her own ticket, I don't see why
she chose a story that made her out such a heel
in general. She is nevertheless a lovely and
desirable little heel, and manages to make you
long to be in Brian Aherne's shoes even if she
is addicted to nasty feminine wiles and the New
Deal platform involving furniture demolition.
Aherne improves each shining hour in this, his
first juicy part.

"ANNA KARENINA." Garbo climbs back
again. Threatened seriously with extinction, the
Garbo legend is thoroughly alive once more. No
one can stop the great Garbo. She gives a beauti-
ful performance here, as the tragic Tolstoy heroine
whose great love transcends the bonds of marriage
and motherhood. Fredric March ably supports her.
Drinking ceremonial sequence opening the picture
is notable. Whole thing is slightly heavy fare for
the general public. Photography excellent.

IS MY FACE RED DEPT.

One of the better known columnists did himself
proud in a recent day's work. Said columnist
wrote, "The making of a Technicolor picture is
not quite so simple as it is cracked up to be..."

* * *

If you'll pardon the interruption, I didn't know
a color picture was cracked up to be a simple
thing to make.

* * *

But to go on. "THE TRAIL OF THE LONE-
SOME PINE" is on a location that is SO cold the
noses of the cast are continually red and frost
bitten and, as red photographs black, the effect
should be too startling.

* * *

The italics are mine. Tsk, tsk. What a weird
color process.

The same renowned scribe, on the same day
(it must have been Blue Monday) states that he
is advised that when color pictures predominate
the industry, blondes will fade from the Holly-
wood spotlight, because in color they photograph
BLAH.

* * *

A new color, no doubt; this BLAH. Better than
Brownette.

* * *

But seriously, consider this statement just after
the production of "Becky Sharp"; come, come.

HOLLYWOODCUTS, by the Shovel Boys (They
dish the dirt). * * * No matter what they find
out for the benefit of the headlines, two facts
about Thelma Todd are undisputed—she was
superbly beautiful, and she was a beguiling and
witty actress. * * * The Rochelle Hudson - Harry
Richman crush is wearing off already. For a
while they were seen everywhere together. It
was only natural that a sweet youngster like
Rochelle should be intrigued by the worldliness
of a man like Richman. * * * Lionel Stander
wanted to get paid when he was asked to work
in a newsreel. Heigh ho. * * * The morals case
against Dave Allen of Central Casting and Gloria
Marsh, alias Turner, was thrown out of court
because two of the chief prosecution witnesses
were accused of horse-stealing. Tut, tut! Mrs.
Astor's horse, no doubt. * * * At the Palm
Springs Dog Show held last month Jeanette Mac-
Donald's two pedigreed dogs won three prizes.
Jeanette drew a few rounds of applause herself.
* * *

ADVANCE FASHION NOTE

A writer who is NOT noted for remarkable pen-
manship wrote the line, "She was wearing a
bracelet set with emeralds and diamonds."

* * *

In the first typed script it came out, "She was
wearing a bracelet set with emeralds and drain
ends."

Pardon me while I dust off a batch of slightly
used New Year's Resolutions.

Water, please!

A black and white portrait of Hal Mohr, a man with dark hair, wearing a suit and tie. He is looking directly at the camera with a slight smile. The background is a plain, light color.

*Congratulations to
Hal Mohr on his splendid
photographic effects in—
"Captain Blood"*

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INTERNATIONAL PHOTOGRAPHER

HOLLYWOOD

TH YEAR

FEBRUARY, 1936

VOL. 8
No. 1



PICKFORD-LASKY LAUNCHES PICTURE UNIQUELY

Coincidentally with Hollywood's first rainy afternoon in the New Year, Pickford-Lasky launched its initial production, "One Rainy Afternoon," with a unique scientific feat. For the first time in cinema history, the actinic ray which makes photography possible was harnessed to provide power to start the cameras grinding, by projecting the ray through a photo-electric cell. The achievement was attended by a number of eminent scientists, notable among them being Dr. Edison Pettit, astronomer and solar radiation expert of Mount Wilson Solar Observatory staff, Pasadena. This picture shows Miss Pickford operating the cell, by passing her hand through the beam. Surrounding her are, left to right: Countess Liv de Maigret, Phil Friedman, Jesse L. Lasky, Dr. Pettit and Samuel Goldwyn. Mr. Lasky is president of Pickford-Lasky Productions. The Countess is a member of the "One Rainy Afternoon" cast.

CENTS
A COPY

MOTION PICTURE ARTS AND CRAFTS

ANNA KARENINA
 THE HEADLINE WOMAN
 THE EAGLE'S BROOD
 WANDERER OF THE
 WASTELAND
 ACCENT ON YOUTH
 FATHER BROWN, DETECTIVE
 MAN'S BEST FRIEND
 \$20 A WEEK
 SWEEPSTAKE ANNIE
 ONE HOUR LATE
 LIGHTNING STRIKES TWICE
 ROBERTA
 BEHOLD MY WIFE
 VANESSA, HER LOVE STORY
 THE WEDDING NIGHT
 RUGGLES OF RED GAP
 NAUGHTY MARIETTA
 THE MARRIAGE BARGAIN
 THE CASINO MURDER CASE
 PORT OF LOST DREAMS
 PRIVATE WORLDS
 WILDERNESS MAIL
 BEHIND THE GREEN LIGHTS
 McFADDEN'S FLATS
 CYCLONE RANGER
 HIGH SCHOOL GIRL
 LADDIE
 THE WORLD ACCUSES
 ROCKY MOUNTAIN MYSTERY
 THE GHOST WALKS
 STRANGERS ALL
 FOUR HOURS TO KILL
 CIRCLE OF DEATH
 SONS OF STEEL
 RECKLESS
 THE DEVIL IS A WOMAN
 ON PROBATION
 STOLEN HARMONY
 GOIN' TO TOWN
 ONE FRIGHTENED NIGHT
 RESCUE SQUAD
 THE TEXAS RAMBLER
 SUNSET RANGE
 HOT TIP
 NEW ADVENTURES OF
 TARZAN

THE DARK ANGEL
 UNCONQUERED BANDIT
 NO RANSOM
 ENTER MADAME
 ENCHANTED APRIL
 THE NITWITS
 PEOPLE WILL TALK
 ADVENTUROUS KNIGHTS
 KENTUCKY BLUE STREAK
 LADIES CRAVE EXCITEMENT
 SYMPHONY OF LIVING
 CODE OF THE MOUNTED
 KID COURAGEOUS
 THE VANISHING RIDERS
 MEN WITHOUT NAMES
 NOW OR NEVER
 COLLEGE SCANDAL
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 CIRCUMSTANTIAL EVIDENCE
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 CAPTURED IN CHINATOWN
 SMART GIRL
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 HARMONY LANE
 TWO FOR TONIGHT
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 TAKE THE FIGHT
 A SHOW WHAT
 THE RECKLESS
 COURAGE
 STRENGTH
 TUMBLING
 DEATH
 PUBLIC
 THE GUN
 THE LAW

TWO FOR TONIGHT
 WATERFRONT LADY
 PURSUIT
 TWO-FISTED
 THE MAN ON THE FLYING
 TRAPEZE
 HOT OFF THE PRESS
 I LIVE MY LIFE
 SADDLE ACES
 WHEN A MAN'S A MAN
 HARD ROCK HARRIGAN
 THUNDER MOUNTAIN
 BARBARY COAST
 THE JUDGEMENT BOOK
 CONFIDENTIAL
 THE RIDER OF THE LAW
 WILD MUSTANG
 VALLEY OF WANTED MEN
 FALSE PRETENSES
 SOCIETY FEVER
 IN PERSON
 THE RAINMAKERS
 MARY BURNS, FUGITIVE
 SHIP CAFE
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 THE LAST OF THE CLINTONS
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THE CLIPPER SHIP

A masterpiece by Mr. Fred Archer who shot this grand old windjammer while on location one day at sea off San Pedro, California. Note the U. S. battleship faintly through the mist away down on the horizon. Thanks, Mr. Archer. It isn't often that the landlubber gets a marine eye-ful like this.

INTERNATIONAL PHOTOGRAPHER

MOTION PICTURE ARTS AND CRAFTS

Vol. 8

HOLLYWOOD, FEBRUARY, 1936

No. 1

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Frontispiece by Fred Archer

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March, 1936



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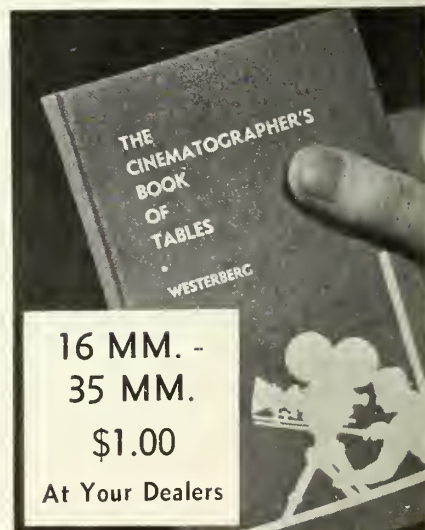
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Motion Picture Sound Recording

Chapter XXIII

By CHARLES FELSTEAD, *Associate Editor*

Our Associate Editor, Charles Felstead, who was formerly Night Foreman of the Sound Department at the Universal Pictures Corporation, is now connected with the Southern California Telephone Company.



AFTER a regrettable but unavoidable absence from these pages, we resume our study of sound recording as it is practiced in the motion picture studios. As though no lapse had occurred in this series of chapters, the present installment continues the discussion suspended by the chapter published in the November, 1935, issue of the International Photographer.

In that twenty-third chapter, the circuit for and the elementary mathematical design of a highly effective three-stage audio-frequency amplifier were presented. This amplifier was termed a "basic" amplifier, since it will serve with equal success as a speech amplifier for a radio broadcast transmitter, as a preliminary amplifier for a public address system or a centralized radio installation in a hotel, or as a main recording amplifier for a motion picture sound recording installation.

Analysis of the Amplifier

The first two stages of the amplifier function as voltage amplifiers, while the final, or third, stage of amplification functions as a power amplifier of moderate output. See Figure 1. The type -56 tube in

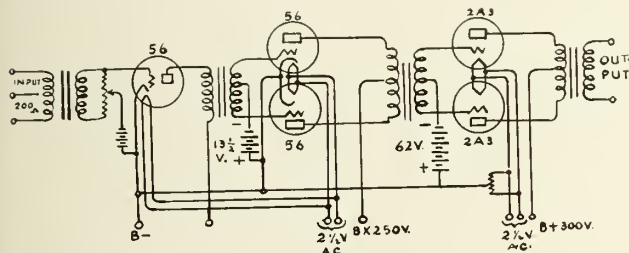


Figure 1. Circuit of the basic amplifier.

the first stage provides voltage amplification alone, since its power output (measured in watts) is quite low. The push-pull type -56 tubes in the second stage also served as voltage amplifiers; and are connected in this manner to handle the increased grid voltage swing provided by the preceding stage without overload or distortion.

The final stage of this basic amplifier employs push-pull type 2A3 tubes, which together will handle a grid voltage swing as great as 124 volts. The power output of this stage is relatively high, being in the order of ten or fifteen watts. This output power is sufficient to supply a pair of loud speakers with enough energy to provide sound coverage for a moderate size crowd of people for public address work, to modulate the output of a small radiophone transmitter, or to drive a wax-cutting head or light-modulating device for sound recording.

The Input Circuit

If a double-button carbon microphone is to be used as the sound pick-up device, the 200-ohm primary winding of the input transformer of the ampli-

fier must be center tapped, as shown at A in Figure 2. When such a microphone is used, a separate battery, sometimes termed a D battery, is required to supply current for the buttons of the microphone; and the voltage is regulated by a rheostat.

A jack is connected in series with each button to permit the meter, which will be described later,

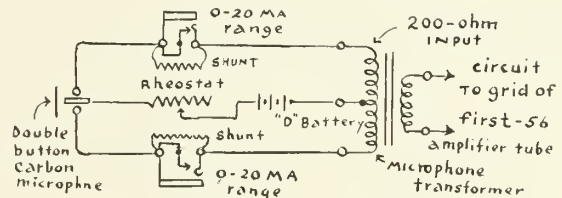


Figure 2A. Double button carbon microphone circuit.

to be plugged in to check the current taken by the buttons and to determine if a condition of balance exists between them (in other words, to determine if they are drawing, as they should, equal amounts of current). Shunts to provide the meter with a 0-20 milliamperere range are connected across the jacks as shown in the illustration. The method of calculating the values of these shunts will also be described. For the average two-button carbon microphone, a current of approximately ten milliamperes should be passed through each button.

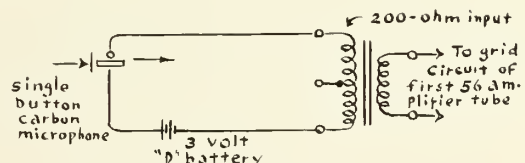


Figure 2B. Single-button carbon microphone circuit.

At B in Figure 2 is shown the circuit arrangement when a simple single-button carbon microphone is connected to the input transformer. If the voltage of the battery used is correct as specified for the particular microphone employed, usually about three volts, no rheostat or meter are required. A single-button carbon transmitter is not recommended, as the quality of reproduction is decidedly poor. Even a double-button carbon microphone does not provide the sound quality deserved by this amplifier.

High-Quality Input Circuits

If a condenser microphone; crystal, piezo-electric, microphone; ribbon, or "velocity," microphone; or a dynamic ("moving-coil") microphone is used with

this amplifier, a different input arrangement is necessitated. These microphones have a very low level output, the power in watts measured at the transmitter is infinitesimal, so pre-amplification is necessary with them. The pre-amplifier is usually a two or three-stage affair, and it has a circuit resembling that shown in Figure 3, which is a standard two-stage pre-amplifier for a condenser transmitter.

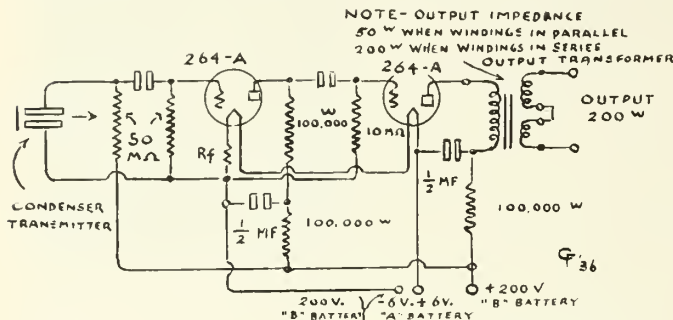


Figure 3. Circuit of a standard two-stage condenser microphone pre-amplifier.

The microphone, or transmitter, is connected to the input circuit of this pre-amplifier, the exact method of connection depending on the type of transmitter. This matter of microphone connection will not be discussed here, since several chapters have already been devoted to the study of high-quality microphones, but the circuits for ribbon, dynamic, and crystal transmitters are shown in Figs. 4A, B, and C.

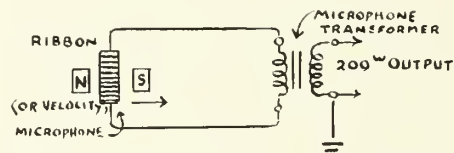


Figure 4A. Coupling circuit for a ribbon microphone.

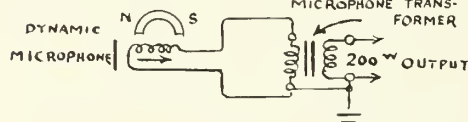


Figure 4B. Coupling circuit for a dynamic microphone.

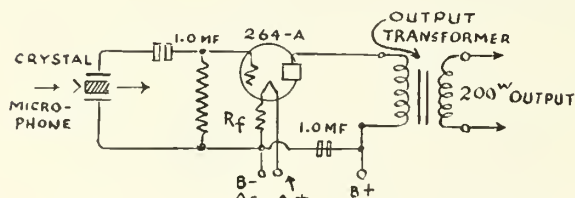


Figure 4C. Coupling circuit for a crystal microphone.

The output impedance of commercial pre-amplifiers is usually adjustable to provide either fifty or 200 ohms impedance. The change in impedance is accomplished by means of straps on the terminal plate. When the two secondary windings of the output transformer are connected in parallel, the output impedance is fifty ohms; when the windings are connected in series, the output impedance becomes 200 ohms. This arrangement will be apparent from Figure 3. Naturally, the latter connection must be used when a pre-amplifier is to be employed with the basic amplifier described last month, for impedances must always match at junction points in a circuit if reflection losses and distortion are to be avoided.

If a phonograph pick-up is to be used, its con-

nection will depend on its output impedance. Certain types of phonograph pick-ups are designed to be connected directly in the grid circuit of the first stage of the basic amplifier, replacing the input transformer shown; while other types are provided with their own output transformer and may be connected directly to the primary of the input transformer, just as a pre-amplifier would be.

Grade of Transformers Determines Quality

The quality of output to be secured from this basic amplifier is determined in a very large measure by the grade of audio-frequency transformers used in its construction. Here, as in most radio equipment, the cost of the item is a good measure of its worth. A few dollars extra spent for the purchase of the best grade of audio transformers that may be secured is an investment that will be returned many times over in pleasing sound quality from the amplifier.

If transformers with permalloy cores are employed, it will be necessary to use parallel feed in the plate circuit of the first stage of amplification. The passage of the steady direct current from the power supply through the winding of a transformer with a permalloy core will cause magnetic saturation of the core material; and if the direct current becomes excessive, the transformer will be harmed to the extent that it will no longer function satisfactorily.

Parallel Plate Feed

Parallel plate feed is not necessary in the other two stages of amplification, since push-pull circuits are used, and the direct current to the plates of the tubes flows in opposite directions through the primary windings, resulting in the cancellation of the magnetic fields created thereby.

The arrangement of the first stage circuit for parallel plate feed is shown in Figure 5. Separate

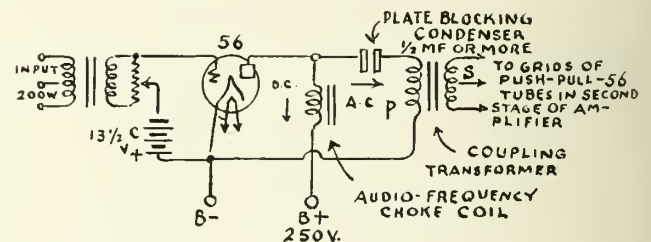


Figure 5. Parallel plate feed for first stage of the basic amplifier.

paths are provided for the d-c. plate current from the power supply to the tubes and for the a-c. speech current generated by the microphone. The d-c. plate current can flow with but little opposition through the audio-frequency choke, but cannot pass through the condenser; while the choke coil offers very high impedance to the a-c. speech current, practically preventing its passage, although the condenser passes the a-c. speech current with practically no loss.

This provision of separate paths for the two components of the plate current precludes any possibility that the audio transformer core will become saturated with magnetic flux by the plate current drawn by the tube. Whether or not the transformer employed has a permalloy core, this parallel plate feed circuit is highly desirable.

The only precautions that must be taken when this plate circuit is used are to secure an audio choke that has an inductance of at least thirty henrys and low ohmic resistance, and to provide a plate blocking condenser that is capable of standing the full plate voltage of that particular amplifier

stage without puncturing. Also, for the sake of sound quality, this condenser must have a capacity of at least one-half microfarad, with a capacity of two microfarads being more desirable.

Matching the Push-Pull Tubes

It is important that the tubes used in the push-pull stages of this amplifier match in characteristics, so that a perfectly balanced condition will prevail. With standard tubes, there is not a great reason for concern on this score, since modern production methods produce tubes of high uniformity. This is particularly true of the type -56 tubes.

The type 2A3 tubes used in the last stage, however, have a tendency to be less uniform in characteristics than most other types of tubes. Tubes for this stage should be selected carefully, taking precautions that tubes that draw nearly the same plate current under conditions of identical filament and plate voltages are chosen to work together.

The Amplifier Output Transformer

The output impedance of the transformer that is connected in the plate circuit of the last stage of amplification is an important matter, and is governed by the impedance of the circuit into which the amplifier is to operate.

For normal conditions, the standard output impedance of 500 ohms should be selected; but if the amplifier is to work directly into a loud speaker, or bank of loud speakers, as in public address work, the output impedance of this transformer should be

matched to the impedance of these speakers.

Where the amplifier is to feed a transmission line that carries its output to some more distant point, the standard line impedance of 500 ohms is most desirable for the secondary of this transformer.

If the basic amplifier is intended to serve as a speech amplifier for a radio broadcast transmitter, the secondary of its output transformer should have an impedance that will match the grid input impedance of the high-power modulator stage it drives. The secondary, in such cases, will be either without taps or center-tapped, depending on whether the modulator stage is of the single tube or push-pull type.

For sound recording, this transformer should be provided with a secondary impedance of four ohms if it is to feed directly into a light valve; or with an impedance of 500 ohms if it is to supply energy to a wax record cutting head.

The next chapter will describe the adaptation of this amplifier to operation from an a-c. power supply, and the arrangements of grid and plate filtering circuits to prevent interaction between the stages and "motorboating." The power supply for use with this amplifier will also be described.

The arrangement and calculation of the shunts to permit a single plate current meter to be used with all stages of this amplifier, and the design of a high-power amplifier capable of feeding a large number of loud speakers, will also be discussed.

The Legion of Honor Decorates Walt Disney

By H. O. STECHAN

With appropriate ceremony, Walt Disney, creator of Micky Mouse, was recently decorated with the Legion of Honor, conferred upon him by the French Government. The presentation took place at the Disney Studios, on Hyperion Avenue, in Hollywood.

The decoration, one of the most coveted honors in the world, was pinned on Mr. Disney in the presence of a large number of friends and associates, by Mons. J. J. Viala, French consul in Los Angeles. It came from the French Embassy in Washington, D. C.

Mr. Disney was awarded the Legion of Honor in recognition of his contribution to the screen, as the French people feel that he has raised the movie-cartoon to an art. In his use of animals to interpret the human comedy, Mr. Disney is regarded abroad as a modern Aesop.

Mr. Viala pointed out that Micky Mouse has become a world-famed screen star second to none, for the good humor that he radiates. The legends he enacts are understandable everywhere. He has developed into an institution for the promotion of international good will, in appreciation of which the French Government singled out Mr. Disney for the Legion of Honor. It also feels that his "Silly Symphonies" exert a benign influence around the world.

Napoleon Bonaparte instituted the Legion of Honor in the year 1802. He was its first grand master. It was originally a general military and civil order; but in the century that has elapsed, it has undergone many changes. Nevertheless, it exists pretty much today as conceived by the Corsican and is the sole order of France. Its higher grades rank in estimation with the most distinguished European orders.

Now the President of the French Republic is the real head of the Legion of Honor, which consists of five classes. There is a limit to the membership in all classifications, except the one relating to foreign recipients. In the present order, as it was conferred on Walt Disney, the symbolical head of the French Republic appears in the center and a laurel wreath replaces the imperial crown of Napoleon. The inscription around the medallion is "Republique Francaise."

In establishing the Legion of Honor, Napoleon said: "In ambition is to be found the chief motive force of humanity; and a man puts forth his best powers in proportion to his hopes for advancement." With this order the founder sought to recognize and reward merit in all walks of life. The decoration is bestowed on foreigners solely for the purpose of creating good will toward France.

In accepting the Legion of Honor medal and the button, which is worn on the lapel, Mr. Disney expressed his gratitude to the French Government, saying that he felt it was not all entirely his own, but that a goodly share of it belonged to his associates who helped him bring Mickey Mouse and the Silly Symphonies to life. This French decoration is one of the few which American citizens are permitted to accept, by Uncle Sam.

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Prepared for the Encyclopedia International Institute of Educational Cinematography,
League of Nations

By EARL THEISEN

Honorary Curator Motion Picture and Theatrical Arts, Los Angeles Museum

V.

Devices Dealing With Persistence of Vision

Through the characteristic of the eye to retain an image for a momentary flash after the image has ceased is based the whole phenomena of the motion picture. The eye does not see motion on the screen, but instead sees a series of poses. These poses contain a record of the motion stage by stage as it progresses, and when they are projected at high speed on the theatre screen the eye remembers each static pose until it is replaced by the succeeding one. In this manner the individual pictures blend to show motion. The discovery of this principle of persistence of vision dates back at least 2,000 years. Lucretius, as has been noted, in his fourth book of "De Rerum Natura" mentions the phenomena. Ptolemy, in his "Optics," which was written about 130 A. D., mentions that if a sector of a disc is colored and then revolved, the whole will appear colored. Allhazen mentions the subject about 1100 A. D.; Leonardo da Vinci, Newton, Boyle and others refer to it.

Abbe Nollet, in his "Lecons de Physique," tome 5, written 1765, mentions it: "When as an object moves very rapidly before our eyes, we often attribute to it size and shape which it does not possess. A Polyhedron revolved on its axis seems to us a sphere; as does also a circle revolved on one of its diameters, etc." Many top-like toys were made at this time illustrative of this principle.

On December 9, 1824, Peter Mark Roget read a paper before the Royal Society which dealt with Persistence of Vision. He illustrated his paper with a spoked wheel device. When viewing the wheel, which was revolving forward through a vertical aperture, the illusion that it was turning forward when turned at one speed and backward at another was witnessed.⁸

The "Thaumatrope" may be said to be the "grandfather" of the motion picture because it was the first device that dealt with persistence of vision in connection with pictures. Though William H. Wollaston, Sir John Herschel, W. H. Fitton and others are said to have invented the Thaumatrope, its invention is now generally credited to John Ayrton Paris. This confusion evidently arises from the fact that these men, who were members of the Royal Society, had much to say of this little device that could combine two pictures as one. In fact, it attracted so much attention and interest as a scientific novelty that the Royal Society undertook to sell them. It was put on the market in 1826 by Paris and he described it as his own invention in his book, "Philosophy in Sport Made Science in Earnest," which was published a year later. In Charles Babbage's autobiography,

"Passages from the Life of a Philosopher," we find the following passage: "One day Herschel, sitting with me after dinner, amusing himself by spinning a pear upon the table, suddenly asked whether I could show him the two sides of a shilling at the same moment. I took out of my pocket a shilling, and holding it up before the looking glass pointed out my method. 'No,' said my friend, 'that won't do'; then, spinning my shilling upon the table, he pointed out his method of seeing both sides at once. The next day I mentioned the anecdote to the late Dr. Fitton, who a few days after brought me a beautiful illustration of the principle. It consisted of a round disc of card suspended between two pieces of sewing-silk. These threads, being held between the finger and thumb of each hand, were then made to turn quickly when the disc of card, of course, revolved also. Upon one side of this disc of card was painted a bird; upon the other an empty bird cage. On turning the thread rapidly the bird appeared to have got inside the cage." He goes on to say, in substance, that some months later at a dinner at the Royal Society Club, he was told of a "wonderful invention of Dr. Paris" being sold at the Royal Institution. After investigation the next day he found a device selling as the thaumatrope which was similar to "our unnamed toy" that Dr. Fitton had made months before for Sir John Herschel and him.¹⁰

In 1831, Michael Faraday conducted a series of experiments with revolving wheels similar to those of Roget. Faraday went further and revolved two wheels in opposite directions which at certain speeds gave the illusion that one of the wheels was stationary. His device, which was known as "Faraday's Wheel," was a direct approach to the problem of the animated picture. He could have had pictures in motion by a substitution of the rear wheel for one bearing a series of pictures around its periphery.¹¹

In the meantime Joseph Antoine Ferdinand Plateau had been conducting experiments of a similar nature in Belgium. He approached the problem in 1828 and in 1831 he announced the "Phenakisto-

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Sharpshooters of Local 659 In the Artichoke Racket

Herewith is a snapshot of the Newsreelers of Local 659, Golden Gate Wing, in action. The shot was made during the photographing of a story on the "Artichoke Racket." As all of the artichokes sold commercially are raised in the district twenty miles south of San Francisco, naturally, with Mayor La Guardia (N. Y.) making a proclamation decrying the racketeering, the boys here went to work on the story. Left to right: Carl Wallen, Still Man; Eric Mayell, Fox Movietone; George Lyng, Hearst Metrotone; Capt. John MacHenry, Universal Newsreels; Joe Rucker, Paramount News; Frank Vail, Pathe News; and the dressed up cameraman, Frank Lowery, Paramount News. (The Fox Soundman, Paul Heise, is under the blanket alongside of his cameraman—"it's raining.")



scope." The "Phenakistoscope" consisted of two discs which revolved on the same shaft. The front disc had a series of slits and the rear disc had a corresponding number of progressive cartoon drawings. While peering through the slits at the passing drawings on the rear disc the appearance of motion was created. His drawings were of cartoon characters somewhat similar to those used in the films today. The first drawing portrayed the character in one position; the next drawing showed the character in a slightly progressed pose of the action, until eight or ten drawings of progressive poses had been made. When they were mounted on the rear disc of the "Phenakistoscope" and spun, the drawings blended together to simulate motion.

It was the tantalizing beginning of motion pictures for the first time. Though it is true the few drawings that he used could not tell a story, it was progress toward the screen. Plateau continued his experiments with the hope of improving and making longer motion pictures. He tried every means at his disposal until finally through endless peering into devices, he lost his eyesight in 1843. Even that did not deter him. He continued with the aid of his wife and assistants, who worked at the problem under his direction. His favorite subject was depicting the devil in the act of blowing up a fire. In his later years he tried to use photography, but as yet it had not reached the stage of usefulness for this kind of work.¹²

In December of 1832 Simon Ritter von Stampfer in Austria made his "Stroboscope," which was very similar to the Plateau Phenakistoscope, though neither was aware of the other's experiments.

In England, William George Horner tried to achieve pictures with another system. His "Daedaleum," or Wheel of the Devil, as it was popularly known, was a shallow cylinder mounted on a stand for revolving that had a sequence of action drawings mounted around its interior. The drawings could be seen through slits. The "Daedaleum" was announced in "The Philosophical Magazine" in 1834: "... The phenomena may be displayed with full effect to a numerous audience. I have given this instrument the name of 'Daedaleum' as imitating the practice which the celebrated artist of antiquity was fabled to have invented, of creating figures of men and animals endued with motion . . ."

Desvignes re-invented the Daedaleum and patented it in France in 1860. Now it came to be known as "The Wheel of Life" because it showed action and portrayed little every-day happenings, such as a child jumping rope, a man pumping water, a top spinning, a darky sawing wood, or perhaps a more serious theme, a monster swallowing an angel.

Many such events were recorded by hand drawings on strips of paper which were to be inserted in the interior of the cylinder. They were motion pictures 2½ feet in length.

The Wheel of Life was first introduced in the United States by William Lincoln, who patented it on April 23, 1867 (U. S. Patent No. 64,117). It was then known as the "Zoetrope," and as such became very popular. Its popularity is attested to by the fact that one of these fragile devices is known to have been carried across the plains of the United States in a "covered wagon."

There were a host of experimenters who, seemingly unrelated, tried to devise instruments or toys in an attempt to achieve the motion picture.^{13, 14} Space would not permit a complete resumé of all the approaches which by count of the records indicate 146 different devices before 1890.¹⁵ Among them was Lieutenant Baron Franz von Uchatius, who in 1853 tried to combine the "Stroboscope" with a magic lantern in order to project pictures showing the trajectory of bullets. This is thought to be the first time a certain measure of success attended an attempt to project pictorial motion.

In 1869 Linnett patented the first of the book form devices for showing pictures of objects in motion which, in principle, was used later in the American Biograph Mutoscope. By thumbing the edge of the pictures that were bound in a pack the illusion of motion was obtained as the different pictures flipped into view.

In narrative ability, the most notable of the pre-photographic inventions was the "Praxinoscope" devised by Emile Reynaud in 1877. The Praxinoscope was a magic lantern arranged with a mechanism that could project strips of pictures 30 feet in length. Reynaud drew bits of dramatic action or fairy tales on a transparent medium which he termed "crystalloid" and then projected them on a large screen to audiences in his "Optical Theatre." His most notable subject, "Pauvre Pierrot," was a picture-play 30 feet in length. It is of interest to note that he used a transparent medium twelve years before Eastman introduced his first emulsion on a rollable celluloid base.

VI.

The Photographic Motion Picture

While some scientists were studying motion, others, notably Wedgewood, Fox-Talbot, Daguerre, Herschel and Archer, had introduced photography. In 1802 Wedgewood published his photographic process, and by 1835, after two years' experimentation, Fox-Talbot had achieved a certain measure of success in fixing a photographic image. Then within a few years photographic methods were improved suf-

(Turn to Page 19)



Joseph Aller, "Joe" to all cameramen of the motion picture industry, is back on his old stamping ground, this time as general manager of the Consolidated Film Laboratories on the Pacific Coast.

On December 10, 1935, he succeeded Benjamin Goetz, Vice-president and General Manager, as chief executive who goes to take charge of M-G-M production in Europe.

It was 1903 when Aller, a young laboratory technician from Russia, arrived in America and sought a connection with a first class lab. He didn't have to wait long, for the famous old Biograph, New York, needed a bright young man and the youthful Russian made good at once.

He soon came under the eagle eye of D. W. Griffith, that great shining light of the cinema, then just arising in the east, and D. W. packed him off to Hollywood.

He arrived at the Fine Arts Studios in 1913 and remained there until 1919. This was the Golden Age of the cinema when "Intolerance," "Birth of a Nation," "Hearts of the World," "Broken Blossoms" and other cinema classics were unfolding their banners to the breezes.

It was 1919 when Mr. Aller decided to go into business for himself and, for a beginning, he purchased the old Triangle lab. at 4500 Sunset Boulevard, now known as the Talisman Studio, where he handled many great productions and made a host of friends among the cameramen for his geniality and for his eagerness to help them with their film problems.

Joseph Aller Elevated By Consolidated to the Chief Executiveship of the West Coast

By THE EDITOR

In the meantime another lab. man was coming to the front, in the person of Watterson R. Rothacker, president of the Rothacker Film Manufacturing Company, of Chicago, pioneer of industrial advertising with film.

It was 1921 when these two enterprising young men came in contact and it did not require any lengthy negotiations to bring about a partnership; an alliance was formed and within less than four months the Rothacker-Aller Laboratory was a fact.

Its location on Melrose Avenue, was in the heart of the motion picture studio district, the finest and most up-to-date of the kind in the industry.

For six years the new lab. prospered beyond expectation and then, in 1926, the Rothacker-Aller Laboratory was sold to Consolidated, Mr. Aller remaining with the concern and Benjamin Goetz assuming charge as executive vice-president.

Three years later this fine plant was destroyed by fire and the service was transferred to Consolidated No. 2 (the Bennett Lab. on Santa Monica Boulevard), G. W. Yates in charge.

From this time to December 10, 1935, Mr. Aller acted as lieutenant to Mr. Goetz, with headquarters at the Consolidated branch on Seward and Romaine Streets, Hollywood.

There the concern owns a tract of seven acres, which is rapidly building into the largest and most up-to-date film laboratory in the world, and it is here that Joseph Aller, as General Manager of Consolidated on the Pacific Coast, will again be surrounded by his cameramen and producer friends of early days, but now big shots in the industry where he helped largely to make them great.

But Joe Aller's activities were not alone of the dark room and the conventional duties of the lab.—he had other things to think about.

Being naturally of an inventive turn of mind he was quick to see the need for improvement in various directions and, between the years 1917 and 1926 he was awarded patents as follows:

FILM CUTTING INDICATOR (1917), "a device to make changes" in film during editing.

TO FACILITATE DEVELOPMENT AND WASHING OF FILM (1921), "improved film racks."

NUMBERED FILMS (May, 1926), "to provide means by which every foot of film may be instantly found."

This last was first employed at Griffith Studio, Sunset Boulevard, and has since come into universal use. Note first strip of film with number printed on edge, cut from the picture "Home, Sweet Home," featuring the late Bobbie Herron.

These, with other patents applied for, have made the name of Joseph Aller prominent throughout the technical world of motion pictures, and others may

The Akers Camera Comes Into Its Own

The new Akers Camera is now being manufactured by the originators and executives of the Duplex Machine Co., manufacturers of cinemachinery, Messrs. H. O. Carleton, G. W. Carleton and C. R. Carleton, who developed the now famous Duplex Printers, developing machines, etc., have taken over the manufacturing rights of all the products of the Akers Camera Co., of Hollywood.

The world-wide demand for this flexible little camera brought it to the attention of the Carleton Brothers and seeing the future of a new departure from the old type heavy cameras they concluded a deal for its perfection and production on a large scale.

The manufacture of the Akers Camera by this recognized cinemachinery organization puts the Akers products now on a plane of substantiality enjoyed by the best of camera concerns. The tolerances of manufacturing precision have been raised to the highest possible standards and the new cameras are comparable now to the finest the professional market can show.

Five months have been spent by the Duplex organization in perfecting manufacturing details, re-designing and tooling up for production of the new model Akers cameras the first of which will make its appearance about February 1st.

From this point they will be produced in manufacturing lots of twelve, thus insuring customers a steady supply and overcoming the difficulties of delay in delivery which, heretofore, caused inconvenience both to the Akers Camera Co. and purchasers.

Essentially the camera remains the same as to size and weight; however, everything is contained in this little camera that can be found in the largest

studio camera, plus its being excellently silenced for sound, and the beauty and precision of workmanship leave nothing to be desired.

Back of all this is the story of a cameraman, efficient, highly respected in his trade and with many years of experience whom the depression found, like many others, broke.

In sheer force of desperation he envisioned a new thing—a new mechanical help to his trade—perhaps if he had been employed he would not have had time to dream—anyway almost four years ago in the deepest gloom of the depression he borrowed a few tools and in a little shed in the rear of his house he built his first camera—entirely by hand.

The result was a little camera that could do many things the larger cameras could not do and he found quite a bit of employment making shots that big cameras could not accomplish. Others saw him working with it and wanted one like it, which led to the first order, and slowly the demand grew until today a substantial organization is producing this new camera which helps so greatly the men who use it.

And now that the dream is a reality, the dreamer, Irving Akers, is now returning to the field of his trade—production cinematography. He will remain president of the Akers Camera Co. and is still on call to his firm as consulting engineer, but his ability as a cameraman far outweighs his necessity of remaining in the shops and he is anxiously awaiting his return to active production.

For years Irving Akers has been known as one of Hollywood's best production cinematographers and it is understood that he has had several foreign offers to photograph productions abroad, but here or abroad he will be an ornament to his profession.

S.M.P.E. To Hold Spring Meeting at Edgewater Beach Hotel, Chicago, Illinois, April 27-30, 1936

The Spring Meeting of the Society of Motion Picture Engineers will be held at the Edgewater Beach Hotel, Chicago, Illinois, April 27-30, according to an announcement recently by W. C. Kunzmann, Convention Vice-president.

Mr. Kunzmann has just completed advance arrangements for the Convention and has appointed all local committees. C. H. Stone is Chairman of the Local Arrangements and Reception Committee. Herbert Griffin of New York will handle Projection

and O. F. Neu of New York is in charge of the Apparatus Exhibit. Mrs. C. H. Stone has been appointed Hostess in charge of all entertainment for women guests.

Seven technical sessions are scheduled for the four-day convention. A get-together luncheon will be held the first day and the semi-annual banquet will be held on April 29th. One afternoon has been set aside for visits to prominent motion picture plants in the Chicago area.

be expected as the years go by.

Congratulations, Joseph Aller, upon both your past achievements and your recent elevation to the big job and may the procession of the years be filled with bundles of prosperity.

The Austin Company is building the new Consolidated Lab. on the tract at Seward Street where Mr. Aller will once more gather about him the cameramen and producers whose mentor he was in the good days at 4500 Sunset Boulevard and at the big W-R Lab. on Melrose Avenue.

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The Question of Development Time

By WILLIAM FLAHERTY

ONE of the hardest problems which confronts the novice (and the professional, too) in photography is that of correct development time for films or plates. That is, how long should he develop a certain film or plate to obtain the best results. It is by no means an easy problem to solve. In fact, the question of development time is so important that one authority has stated that the whole science of development consists in knowing when to stop. This is true because, generally speaking, the photographer can best control the contrast of negatives by varying the time of development.

Most beginners have an erroneous conception of what development means. They are concerned mainly with getting a negative image on the film and then searching until they find a printing paper that will give a suitable print; one that is neither too contrasty, nor too flat. This is usually the case with roll film where there are from six to sixty exposures on one roll. When the photographer has a camera using plates, cut film, or film pack he can give each exposed film individual development. And individual development means developing the negative to suit the printing paper, and not vice-versa.

Contact paper usually comes in six degrees of contrast, ranging from soft to hard. Enlarging bromide paper comes in three or four degrees, and most of the higher grade chloride and chloro-bromide papers come in only one degree. In any case, select some standard brand of paper, and endeavor to develop all negatives so that they give suitable prints on the normal or average grades of paper. That means that the negatives should be such that they can be printed on paper calling for negatives of average contrast, which in turn, is all dependent upon the length of time that the exposed film is left in the developer.

However, there are a number of things governing the time of development. These are mainly:

- I. Nature of the subject to be photographed.
- II. Temperature of developer.
- III. Exposure given to film.
- IV. The film itself.
- V. The printing paper.

Photographic subjects can be divided roughly into those of high, medium and low contrast. Under high contrast subjects can be listed:

- I. Landscapes which show the sky, and have large areas of shadow in the foreground.
- II. Shots made in the shade of trees, and showing some sky; or else showing both the shade from trees and patches of bright, sunlit ground.
- III. Indoor scenes illuminated by light from the windows.
- IV. Landscapes with snow and dark objects or shadows in the foreground.

V. Scenes in streets with high buildings and showing some sky. Also indoor shots made with Photo flash and Photo flood lamps are generally contrasty unless the light is very well balanced or diffused. Light which comes from a small source

such as an open electric arc or a clear glass electric light bulb gives a contrasty subject, hence the use of diffusers. Fog and grey, overcast skies are nature's diffusers. Any subject which has good bright highlights and large areas of shadow near the camera is a contrasty subject. Usually, the more contrasty the subject the shorter the development time.

Subjects of medium contrast include:

- I. Average shots made in sunlight, such as small groups of people, animals, etc.
- II. Shots made on ordinary, well lighted streets in which there are no large areas of shadow within, say 100 or 150 yards of the camera.

III. Landscapes with no heavy shadows in foreground.

A subject of medium contrast, should be developed so that the negative will give a suitable print on a paper of normal grade. This will be referred to later.

Low contrast subjects include:

- I. Ordinary landscapes on a dull, cloudy day.
- II. Shots taken in the shade where there is no bright sunlight, or no bright sunlit areas showing, such as in a well shaded porch.
- III. Distant landscapes.

Subjects of low contrast usually call for longer development, depending on the subject.

Temperature also has its effect on the length of development. Ordinary developers give more contrast in a given time as the temperature increases. This is especially true of metol-hydroquinone developers. In this case the increased temperature gives the hydroquinone greater energy, resulting in more contrast in the negative. Sixty-five degrees F. is the temperature generally recommended by manufacturers. When it is not possible to maintain this temperature one must refer to the time and temperature tables for the particular developer being used. Most of these tables give a time which is suitable for amateur film when exposed to subjects of medium contrast. The time must be varied one way or another when the subject is not one of medium contrast; contrasty subjects requiring less time, and vice versa.

Exposure governs the shadow density of the negative, and development governs the highlight density, so the two are related. Low contrast subjects re-

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Top Left—Subject of high contrast.
Lower Left—Subject of medium contrast

Top Right—Subject of low contrast.
Lower Right—Subject of low contrast.

quire less exposure as a rule, but there are exceptions. Distant landscapes are low in contrast but reflect a great deal of light toward the camera. Therefore, less exposure and longer development. Experience will soon enable one to know when such a procedure should be followed.

When the subject is contrasty one must give more exposure; enough so that detail in the shadows will have time to be recorded in the negative, and now the development time must be less than that shown in the tables. How much less depends on the subject.

Some films will develop to greater contrast in a given time than others. Until one becomes proficient in judging contrast in negatives it is better to use only one kind of film and learn just what it will do.

The last and most important factor to be considered is the printing paper and the kind of negative it calls for. Enlarging bromide of normal grade requires a negative of a little more contrast than would be necessary for normal contact papers. Chloro-bromide enlarging papers are about midway between the other two.

Let us suppose that we wish to photograph a subject of normal contrast. After three or four films are exposed, in succession, to the same subject we go to the dark room and find that the temperature of the developer is 60° F.

The tables might read something like this:

55° — 30 minutes development
60° — 25 minutes development
65° — 20 minutes development
70° — 15 minutes development

One of the above films is developed for 25 minutes and printed on let us say, normal contact paper. If the print is of suitable contrast we can use the different times given in the table for all negatives intended to be printed on this same make and kind of paper. If the subject had been contrasty, about 18 or 19 minutes time would do. On the other hand, if the subject had been dull or low in contrast 35

to 37 minutes development would be necessary.

In the example above, suppose that 25 minutes development resulted in a negative of too much contrast for the contact paper. Take another of the exposed films and develop for 23 minutes at 60° F. and print again on the same kind of paper. If this does not give a good print, try a still different length of time. If the correct time is found to be 21 minutes, then we can amend the time and temperature tables thus:

	Av.	High	Low
55°	26 min.	19 min.	41 min.
60°	21 min.	16 min.	33 min.
65°	16 min.	12 min.	25 min.
70°	11 min.	8 min.	17 min.

The table as it now stands will practically always give the correct times of development when using the **same kind of film and paper** as was used in the test exposures. In the first column the times are for average subjects; the second for subjects of high contrast; and the third column for subjects of low contrast.

Each particular make of developer has its own time and temperature tables. If necessary write to the manufacturer and ask for them. After you get the tables try them out at 60° or 65° and find the time for your favorite film and paper combination and make a table as shown above. The times all have about the same relationship to one another, i. e.: 25-16-12 for subjects of low, medium and high contrast, respectively.

To sum it all up briefly, choose your printing paper and develop each negative to fit this paper. In the long run this method will give the best results, besides making it unnecessary to stock up with five or six different grades of paper. With roll film cameras, more often than not all the exposures will fall into one class. And finally, the ability to judge contrast in subjects and negatives comes only with experience. If you make a slip, don't feel badly. Those with years of experience make their mistakes, too.



The Miniature and the 8x10

Miniature Camera Photography

Interesting Method of Reducing Negatives

THE Miniature and the 8x10: Under this heading could be written an article far exceeding the limits of this department, listing the pros and cons as voiced by many camera enthusiasts, and we would probably end up by getting nowhere. However, a talk given by Dr. Agha, art director of the Condé Nast publications, to the Miniature Camera Club of New York City recently, brought out some interesting points.

The miniature camera enlargement and the 8x10 contact print are difficult to compare, for there is a difference between an enlargement and a contact print. In the latter there exists that extreme sharpness. We may even consider it too sharp. It does not seem natural but rather harsh, which is especially noticeable in portraits made with the ordinary anastigmat lens. Such extreme sharpness is desirable in certain types of commercial work.

The enlargement diffuses the sharp lines, giving them a softer and more natural appearance, without undue loss of detail, the latter because of the precision lenses of the miniature camera. It is therefore a mistake for miniature camera photographers to make comparisons of their enlargements with contact prints. The miniature camera is unsurpassed for many types of photographic work, and its owner should take advantage of its possibilities, producing photographs that are out of question with larger cameras.

Quality in Enlargements: In his address to the Miniature Club of New York City, Dr. Agha also stressed a point which has been constantly written about in this department—enlargement quality. Many of the miniature camera prints submitted to him were not only **obviously** enlargements, but also of poor quality. They had a grey flat appearance. The shadows were not really black, and the highlights not white. We will not delve into this topic but will refer the reader to past issues of INTERNATIONAL PHOTOGRAPHER. Hints on how to obtain quality enlargements have been continuously mentioned in this department.

Dust: This is the season of greatest enlarging activity, and dust on the negatives will be the cause of some miniature camera photographers losing their good humor. So many materials have been suggested for removing dust effectively that it would be difficult to mention any specific item to be used for

this purpose. We may say that any soft material can be suitable for this purpose.

In many instances the difficulty will be found to be the desire of the photographer to turn out a large quantity of prints in a single evening. Attention is not given to the individual negatives, with the result that there will be many dust spots in the enlargements. If each negative is closely inspected before prints are made, and every dust speck removed, cleaner enlargements that require little or no spotting will be produced. Undoubtedly, this will mean that fewer enlargements will be made in a single evening, but it is best to have a few good enlargements than a quantity of them that will have so many specks and spots as to entirely discourage the photographer.

Still Another: We have heard of another suggestion in reference to obtaining better results in fine grain developing. One amateur "primes" his developer by placing about a foot of fresh film in it, and allowing it to remain there for 24 hours. The film is exposed to light first. The "rawness" is taken out of the developer, and this amateur claims that it also produces finer grain.

Simplified Sepia Toning: We have just received a notice from George Murphy, Inc., in which a one-solution sepia toner is mentioned. All that is required is to immerse the prints in a dilute solution of this product, known as Septon, and a permanent sepia tone is obtained. The solution serves equally as well for bromide papers and chloride papers. This will greatly simplify matters for the photographer, and will bring sepia toning within the realm of individuals whose available space and time does not permit them to mix their own solutions. Further information can be obtained by writing to George Murphy, Inc., 57 East 9th St., New York City.

Diffusion to Minimize Grain: Every now and then a negative having a relatively large grain does pop up. One method of minimizing grain is to slip a diffusion disk or filter over the enlarger lens. This does the trick in many cases.

Mounting Prints: At times that problem of what to do with the ever-increasing number of prints at hand has the photographer perplexed. Many amateurs prefer the usual method of mounting the prints in an album. However, when one makes 5x7 and larger prints the ordinary album does not seem to be the right expedient for this purpose. One method of keeping the prints neatly, and also enhancing them, is to mount the prints. Uniform size boards can be selected. It is difficult to recommend a particular type of board to use for this purpose. Any art dealer will have quite a few different types for the photographer to select from. A relatively simple and inexpensive material for this purpose is known as "eggshell board."

The prints can just be simply mounted on the boards, or if the photographer wishes to be more elaborate, he can draw borders around the prints after they have been mounted. Then again, the

boards can be cut out in the center, and the prints placed in the cut-out portion, the mount acting as a frame. In this case it will be necessary to have additional material as backing.

There is one step in which the amateur usually fails, and that is pasting the photographs to the mounts. The proper material to use for this purpose is rubber cement. This is used by applying a generous layer both to the portion of the mount upon which the print is to be pasted, and to the back of the print. The cement is allowed to dry, the print then placed correctly on the mount. A sheet of white paper is placed over the print, and by rubbing with the hand the latter is secured to the mount. For better results the mounted prints should be placed under pressure for a short time.

The rubber cement can be applied freely, for after the print has been mounted the surplus cement is easily removed with an ordinary eraser, without leaving any stains.

An Interesting Method of Reducing Negatives:

In the December, 1935, issue of the English magazine *Photography*, a method of reducing negatives is prescribed which not only does not increase the grain size, but is actually claimed to produce a finer grain. The method is to treat the dense negative with the sepia toning bleach (10 grains of potassium ferricyanide and 10 grains of potassium bromide to each ounce of water.)

The negative is partially bleached in the above solution, rinsed and immersed in hypo. The bleaching should not be carried too far, but the process can be repeated time and again.

The reason it is claimed to actually create a finer

BY
**AUGUSTUS
WOLFMAN**



grain in the negative is the fact that the process has the effect of reducing away the top layers of silver first, in which apparently the larger grains exist. In addition contrast is not increased. Quite the reverse this method of reduction tends to reduce contrast. Its effect on the reduction of grain makes this process extremely interesting to the miniature camera photographer.

Orange Filters in Enlarging: At times amateurs are heard to complain about the inefficiency of the filters they employ on their enlargers. The claim is, that despite the fact that the filter is placed between the light coming from the enlarger lens and the paper, the latter becomes fogged. It is usually found in such cases that the sensitive paper is exposed to the filtered light for as long as 10 to 15

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minutes. The filters used with enlargers are intended to enable focusing directly on the paper, and allow the latter to be correctly placed, which should only take a minute or two. Allowing the paper to remain exposed to the filtered light for an unusually long period may result in the paper becoming fogged.

Color: One phase of photography which is destined to take great strides this year is color photog-

raphy. Interest in this type of work is increasing rapidly. The making of color transparencies has been greatly simplified by the introduction of Dufay-color film, and we can look forward to having processes introduced which will enable the amateur either to simply make actual color prints, or have them produced at a reasonable price by photographic laboratories or manufacturers. The photographer should interest himself in color for it is the coming thing.

Miniature Camera in the Studios

By KENNETH ALEXANDER

IT has been interesting to note the growth in popularity of the miniature camera around the studios, especially as employed by the still men. At first a greatly despised tool among all of us, still men and laboratory men combined, condemned from the start, and now so strongly entrenched as a valuable asset to "what the up-to-date still men must have" as part of his equipment.

It is important to keep in mind that there is no such thing as a universal camera, one which is the best for every purpose. Some people like blondes, some brunettes, and the same is true in modern photography today.

It is an absolute fact that there is a vast new field opened up for our experimentation with the advent of a precision instrument such as Leica and Contax cameras.

On this matter of cameras of different types, I have worked at both ends of the scale, from the size 11 x 14 down to two-frame miniature sizes. I obtained the finest technical quality on the 11 x 14 size film and used it successfully on three of our major productions. Balancing this, however, incurred a loss of spontaneity and animation, due to the absence of quick action in the operation of such a size camera. This again proves my point regarding a universal camera.

The miniature camera is a sort of stimulant to the still man, tends to shake him out of conventionality, makes him see things that go on about us all in our daily lives and then get them down on paper.

Now that the miniature camera is with us I find myself more observing with an eye trained at all times on possible photographic material.

Photography in general has evolved greatly in the past few years. First we strove to imitate the great painters of portraiture and landscape—and the results were pretty bad.

Then a few of the more alert minds began to see things of interest photographically going on all around them and that was what brought about the small instrument development to its present state of perfection.

I have thrown out of the window certain ideas of technical perfection and, to my mind, it is necessary to do so at the start, in this sort of photography.

As I size up the situation of modern technique and what it attempts and is intended to do, it is this: It is a visual record of life in this year 1936, as we find it, and the worker with the most alert, active, observant, broad-minded point of view is in a position to obtain the best results. And, in the final analysis, that is what it all amounts to.

As the result of technical training, skillful still photographers should have no trouble with the miniature camera. We should be easily able to eliminate all the "applesauce" which now surrounds the choice of developers, enlargers, film and what not. Remember, there are many good automobiles on the market, but consider the amount of useless argument and wasted conversation that goes on between one human being and another on this subject. The same thing applies to miniature photography.

There are numerous simple rules, familiar to all of us:

- (1) Scrupulous care and cleanliness in all steps of the work.
- (2) A good enlarger, preferably of the condenser type, which aids in obtaining extreme brilliancy.
- (3) Avoid too much worry about fine grain developer. Get a good formula and keep it at the correct temperature.
- (4) Remember that a tripod is still a most valuable photographic instrument.
- (5) Keep photographic quality in mind, but don't make an issue of it. Let your subject matter and how you handle it more than make up for certain unavoidable set-backs of the miniature technique.
- (6) Work for the play of large masses of shadow against light, and big, broad composition of subject matter, avoiding detailed composition entirely.
- (7) Remember that there is a lot going on in the world and, if you are on to your job as a miniaturist in photography, you can register very interesting pictures.
- (8) Get set on a certain technique, suitable to yourself, master it completely and then forget all about it.

I would not go back to the old days, of the 8 x 10 camera only, for anything; in other words photography has enlarged its vision—and it's the miniature camera that has done it.

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WHAT IT TAKES TO MAKE A GOOD SPLICE

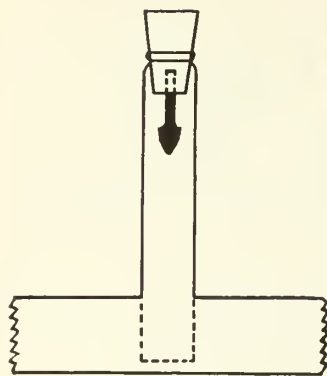


Fig. 1.

7R

LET'S consider that indispensable adjunct, that connecting link, of cinematography—the good old reliable Film Splice. For, all too soon, "there'll come a day" as Joe Penner puts it, when splicing film becomes a necessity whether you are an advanced amateur or mere beginner in movie-making. Film splices are used more often for repairing damaged film or for purposes

of editing, it happens, than in any other phase of cinematography. And since this is the case, it behooves everyone handling film to be adept at making a good, clean and neat splice.

Unfortunately, it must be admitted, in the field of amateur cinematography there is a deal of variance in splice making. All sorts of splices, good—bad—and indifferent, are encountered. In the majority of cases, however, the poor splice is most often the result of the maker's lack of experience; and very often, his inability to use properly the splicing equipment at hand. At this juncture it may be aptly remarked that splicing film is not at all difficult, but it is an operation that requires skill. Only by sufficient practice, as in everything else which must be mastered, may the movie-maker acquire the necessary technique. That old saying, "Practice Makes Perfect," is probably truer of splicing skill than in most any other movie-making endeavor.

Stated simply, splicing is that part of cinematography whereby two films are joined together by cutting and cleaning the overlap of one to match the frame of the other, applying film cement, then pressing both ends together.

Splicing is not, as many persons suppose, the result of any "gluing" together of two film ends. Actually, it is a chemical action in which the film cement acts as a solvent of the slow-burning acetate of cellulose Safety Film base. More correctly, therefore, the two film ends are welded together—the cement chemically softening the two surfaces which, when pressure is applied to them and the cement has thoroughly dried—forms a homogeneous and continuous strip of film. The removal of emulsion image from the overlapping portion of one film end is required, it must be remembered, because film cement has no action on film emulsion. To effect the welding process of a splice, the cement must be applied direct to the clear base of the film. Of lesser importance for removing the emulsion, it may also be pointed out, the overlap should be perfectly transparent to accommodate the other film end visual image which is spliced over it. This in order not to obstruct the clear passage of light from the projector, and to preserve the full frame visual image where the splice occurs. Even if it were possible to splice film without removing a bit of the emulsion on one end, there would still be an overlap in the visual image which, while only causing a momentary dark flash on the screen, nevertheless would prove unpleasant and annoying.

A film splice may be either of two kinds; the straight or the diagonal. There is much to be said

AMATEUR MOTION PICTURE

HAMILTON

for both types and at the same time, as is so often the case in making comparisons, each also has its drawbacks.

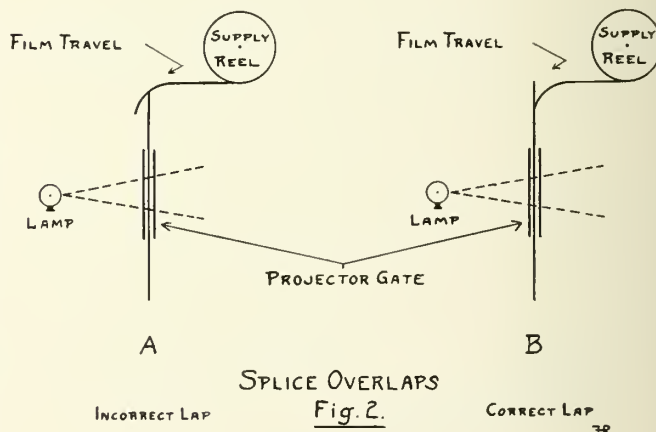
The straight splice is universally used in professional films and therefore it was natural enough that the same idea was carried over into the sub-standard film field. Straight splices necessarily include emulsion removal from around the film perforations (two perforations in 16 mm.; one in 8 mm.) and this calls for greater care in scraping than on the diagonal splices. However, the straight splice does not extend very far into the frame. In fact, the smaller aperture of the projector cuts down somewhat the area covered by the camera and at the same time serves to reduce the width of the straight splice to a minimum.

On the other hand, the diagonal splice advocates uphold the claim that being longer, the diagonal is stronger; also, that the splice runs through the projector gate more smoothly than the straight; and lastly, there is no danger of destroying film perforations in removing emulsion, preparatory to splicing, as the splice does not fall at the point of these perforation holes. Nevertheless, in actual projection the diagonal because of its greater length, which hits the screen diagonally, is very likely to leave the impression of a momentary flicker.

The choice in type of splices therefore resolves upon the individual amateur. Personally, we have used both types of splices, for a good many years, each with equal success. It is our experience that proper care in making a splice is of far greater importance than the type used.

It seems fitting at this point to take up the fundamentals of good splice-making and to enumerate and consider them:

First—A good splicer. By this is meant a splicing machine that is practically automatic and one that minimizes actual handling of film by the splice maker. Amateur films being the narrow gauge they



SPLICE OVERLAPS
Fig. 2.

are, it is manifestly impossible to do a neat splicing job with makeshift apparatus. Cheap splicers will only afford indifferent results, besides unduly tiring one out in attempting to patch film. In this connection, we recall a personal experience which happened several years ago. The projectionist of a

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PICTURE SECTION

EDITOR

FILM CLIPS

Blank Separation Frames in Titles: Leaving a short section of blank film—only a few frames—between each individual title, as they are being photographed, will prove a great aid later when the titles are being cut into a reel of movies. Thus, in splicing, the spot where one title ends and the next one begins is more easily located by the appearance of the blank frames. The need for this splicing "signal" is particularly necessary when handling 8 mm. film, due to the minute frames of this narrow-gauge stock. To incorporate blank frames between titles, proceed as follows: After having photographed a single title, turn off the title lights. Then press the camera operating button for a single frame or two, exposure. Repeat this process after photographing each title, until your entire roll of film is completed. If your titles are of the direct positive type, the blank separation frames will be white; or if reversal film has been used, they will be black.

Experimenting With Positive Film: No film is cheaper than positive stock and for the amateur, who likes to experiment, it can provide a great deal of entertainment at small expense. Positive film is quite contrasty, however, and has a slower speed than regular cine film. Even so, interior scenes of medium close-up size may be recorded on positive with the aid of some Photoflood bulbs. Short lengths of positive film can be developed in still-picture developing trays, using regular snapshot film developing solutions. And your own camera, provided it has a removable lens, can be pressed into service as a printer. With the lens detached, the camera is loaded with the develop film strip in contact with another strip of fresh positive. Hold the lens aperture about six inches from a 40-watt bulb, with the camera operating at normal speed. Develop this second strip of positive, and you'll have a real home-made print.

"Mammy": Regular reversal film will not work this trick. But by using positive film as in the foregoing paragraph, or regular negative-positive system film, you can outdo Al Jolson in his famous "Mammy" song make-up. Shoot a close-up, about a six-foot length of 16 mm., with a result that you have two films; a negative strip and a positive strip, each of like footage and identical action. Now for some editing and cutting. Begin the close-up with about two feet (80 frames) of the positive strip; then cut in a length of negative, switching at the identical frame of the negative which your positive ends with. That is, the positive strip will be cut at frame 80, and the negative strip will be spliced to it beginning with negative frame 81. (To keep relative positions of the subject, the positive print will have to be spliced emulsion face down—negative strip with emulsion face up on the splicer.) Alternate your cutting and lengths of both positive and negative strips, keeping splice changeovers accurately corresponding to frame measurements. If the work is done carefully, you'll get a good laugh when the completed close-up is screened.

Timing Slow Motion: Don't start your camera for

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QUESTIONS AND ANSWERS

1. Can duplicates be made of Kodachrome natural color films?

No, not in natural color. However, if your roll of Kodachrome contains some valuable subject, scenes which are impossible to retake, ordinary duplicates may be obtained from the original Kodachrome roll; these duplicates will of course be on plain black and white film.

2. What is the purpose of Fades, in most amateur films?

Fades are most useful in these types of films to impart smoothness to the pictures on the home screen. They are generally used as follows: To denote lapse of time; change of subject; and change of location.

3. In photographing my own direct titles, I notice a difference in density of the background. In every case I was using the same lens stop with my spring-driven camera.

No doubt the change in density, which you have noticed, was caused by your camera spring-motor. Some cameras have a tendency to slow down, as the spring unwinds; thus this causes a slight change in exposure. While this slight slowing down does not normally affect your regular pictures, it becomes quite apparent in the case of photographing titles. It is good practice to wind the camera fully before each and every title; this will remedy your trouble. Of course, if after doing this you still encounter trouble, have your camera checked over at your dealer's.

4. What lens stop shall I use on my title board? I am using positive film, making directs.

It is impossible to give you an exact lens aperture setting, due to the many different types of boards and conditions of lighting. Therefore, the only safe way to ascertain the proper exposure for your board is by tests, as follows: Expose about 10 feet of positive film in the test. Starting at F/16, expose several frames; then set your lens at F/11 and expose several more frames. Continue this procedure, changing your lens aperture for each exposure, until you have used the largest aperture of the lens. Instruct the film laboratory to develop the film normal time. From the finished film you can easily select the exposure which has given the best results. Henceforth, any future titles you make should yield similar results.

5. Are fades possible when making direct positive titles?

Not with much success. Gradually **increasing** the opening of your lens, while the camera is in operation, will simulate a fade-out; and gradually **decreasing** the lens aperture will produce a fade-in. For various reasons, however, direct positive fades are not recommended.

6. Why does a projector have a two- or three-blade shutter while a camera has but one blade?

Only a single blade is absolutely necessary either on a projector or on a camera to cover the movement of the film from frame to frame. However, a single blade causes a noticeable flicker, of no consequence in the case of a camera but very objectionable in a projector. Experience has proved that intercepting the screen images more often than once per frame, materially reduces flicker and the

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WHAT IT TAKES TO MAKE A GOOD SPLICE

(Continued from Page 16)

first-run theatre, which was exhibiting some continuous narrow gauge films in the theatre lobby, had occasion to splice the 16 mm. film. We found him in a state of great agitation—his cement refused to hold and he could not get the 16 mm. film ends to register properly. Experienced as was our friend in making patches, even without the aid of a splicer on large 35 mm. professional film, he was grateful indeed when we came to his assistance with our 16 mm. splicing machine. Remember, then, a really good splicer will properly hold film without undue handling by the maker; will cut the film ends accurately; will apply correct pressure on the splice to insure elimination of any air bubbles; and will provide a neat splice which does not disclose an overlap of the frame or, worse yet, will not show a white transparent line on the screen at the splicing point.

Second—Adequate removal of emulsion from the overlap which is to receive the film cement. Removing emulsion may be accomplished by the wet or by the dry method. The first named is the quickest, if not absolutely necessary, and is especially recommended for old, brittle film. For film emulsion, when slightly moistened, is removed very easily by the film scraper. However, moist emulsion is quite tender and open to damage until it is dry again. And further, in spite of precautions, some moisture remains which, when the cement is applied, destroys the efficiency of the splice, as water and film cement do not mix. The dry method for most films is preferable although it does require greater care in the making. Emulsion scraping should be done carefully to avoid ruining perforation holes. Again, no trace of the emulsion must be left and the film base must not be scratched into, as this would only weaken the splice. Sometimes it is advisable to roughen the film base surface slightly with a typewriter eraser to insure a good splice.

Third—Film cement that is in proper condition. Cement is a very active solvent and prolonged exposure to air quickly thickens the solution, which will not effect a good weld. In some cases cement may be too thin which also adversely affects splicing. Nevertheless, a poor splice is more often caused by using "stale" cement. To avoid prolonged exposure of film cement to air, a special bottle, as shown in Figure 1, has been found very useful. This is a small-mouthed perfume bottle, fitted with a cork into which has been fastened a quill and brush. The bottle, positioned in a hole drilled in the splicing board, is of convenient dimensions for handling and it is possible to secure just the right amount of cement on the brush. Only a small portion of cement is transferred from the supply bottle, thus insuring a fresh mixture each time a splicing job is undertaken; and the perfume bottle prevents undue evaporation of the solution, because of its very small mouth.

Fourth—Cementing the splice. When the point of applying cement to the film is reached, both good judgment in the amount of solution and swiftness of application are essential. Too much film cement applied to the base will considerably weaken it; when dry the splice will become brittle and is quite likely to buckle in the projector. Only apply enough to cover the entire cementing surface with a thin

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FILM CLIPS

(Continued from Page 17)

slow motion scenes until the action of the shot is under way, or wasted film will be the result. If possible, rehearse the scene for timing, by counting it off in seconds. For example, if the scene normally takes 20 seconds and your rate of 16 mm. exposures is 72 frames per second, you will be shooting 1440 frames or 36 feet of film! This shot would last 60 seconds on the screen! This is abnormally long, will prove uninteresting in most cases, so only photograph the significant portion of action. Always bear in mind, a slow motion shot "eats up" film rapidly; and becomes boring on the screen if overdone.

Title Test Trailer: Laboratories prefer to make tests before proceeding to develop a roll of title film. When making your titles, it is advisable therefore to allow for a test by including extra footage on the last title; two or three feet will do. Before the lab man transfers your film from reel to developing rack, he can first tear off this trailer strip for test purposes. Foresight on your part will prevent your last title being missing after processing; and equally as important, the final title will not be finger-marked, rack scratched or punctured by the developing rack pins.

Spooling Positive Film: Since positive film ordinarily comes coiled on a core for laboratory use, it is necessary to exercise certain care when you desire to spool the film onto a daylight loading reel for camera use. Your film rewinder and a five-watt red bulb, the latter easily procurable at any ten-cent store, are all you need. The room where you do this work must be totally dark, except for the red bulb which will not fog the positive. When the film has been threaded on the camera reel, already in place on the film rewinder, hold the core carefully as you begin to turn the rewinder. Avoid having your fingers in contact with the positive. Another word of caution: do not rewind too fast. Positive, as it uncoils from its core, is subject to static electricity. Quite often you can hear the crackling and see the static, therefore wind the film very slowly—you don't want it fogged before you have a chance to use it in your camera.

Film Splicer: Do you number yourself among those movie makers who, having bought a camera and a projector, believe their outfit is complete? This is not unlike starting an automobile trip with no spare tire, as you'll soon find urgent need for a good, automatic splicer in your movie making activity. A splicer is one accessory that is indispensable in cine work. Its cost is small indeed compared to the yeoman service it will render. And while you're at it, buy a good splicer; one which minimizes handling film by your fingers and one which makes a neat splice.

Winter Filming: When taking your camera from the warmth of your home for outdoor service on extremely cold winter days, moisture is likely to condense on the front lens element. Always check the lens for this condition before taking your first pictures.

THE ARCHAEOLOGY OF A MOVING PICTURE

(Continued from Page 7)

ficiently to attract attention as a possible means of recording pictorial motion. In 1849 Plateau suggested that it could be employed to obtain a series of photographic images to be used in his Phenakistoscope. Because photographic emulsions at this time required lengthy exposures—sometimes of an hour's duration—it was Plateau's intention to photograph models rather than persons in various poses and by this method get an outline that would be more accurate than the hand-drawn pictures he had been using.

Desvignes was the first to achieve a photographic motion picture. In 1860 he photographed for his Wheel of Life a series of pictures of a steam engine in which he showed the flywheel revolving. The next year Du Mont, in England, patented (British Patent No. 1457) a method of photographing successive poses in which a shutter exposed the photographic plates as they succeeded each other. He suggested several methods of changing the plates, such as arranging them as facets on a prismatic drum, or dropping them from an upper chamber to a lower one. It was his hope to successfully photograph the necessary progressive poses in order to portray motion; but the photographic emulsions of the time were still too slow.

The most significant of the experiments of this time were those conducted by Coleman Sellers in the United States. He attacked the problem as an avocation to make a toy to amuse his children. He photographed his two children at play in a series of poses. The difficulties he encountered may be judged from the fact that the fastest of the photographic methods of his time was the "wet plate" method. In this system the photographic emulsion had to be kept moist during exposure, and to do this and photograph his children while they held the necessary poses was no small task. In order to keep his plates moist a sufficient length of time, he employed glycerine. After he finished the photographs each pose was mounted on a paddle and the paddles were mounted by means of hinges to a hub. By turning the hub each paddle was raised to an eyepiece, then as the hub progressed in its revolution the first paddle dropped from view, leaving the next paddle exposed to view. This device was patented in the United States, No. 31,357, on February 5, 1861, as the Kinematoscope. The word "Kinema" used here for the first time in reference to the motion picture eventually came to be its international name.

Ducos de Hauron in 1864 filed a patent application in France on a device which may be said to be the first motion picture camera. In this application, he designated a series of small lenses mounted in a band in conjunction with an aperture for a shutter. This band, as well as the sensitized photographic

band, unwound by means of sprockets and perforations simultaneously from one spool to another. The viewing was accomplished in the same manner. This patent was not published until 1900, as No. 61,976.

In the subsequent years many attempts were made to achieve the motion picture. J. A. Rudge, in 1866, tried to photograph motion as a series of poses, and four years later he exhibited some pictures in his "Bio-Phantoscope," which was a magic lantern with a revolving lamp house. He mounted his poses of the action which were in the form of a transparency slides around the lamp house, and in turning it by means of an intermittent arrangement, each picture was projected to a screen.¹⁶ He also used a shutter that intercepted the light beam while the picture was being turned in place. Edwards, in 1867, took out British Patent No. 849 on a system for taking successive pictures instantaneously on the same plate, which was later used by both LePrince and Friese-Greene with a certain measure of success.

Henry Renno Heyl evolved still another method. He took posed photographs of a couple doing a waltz by the wet collodion process, then mounted the photographs in the form of transparencies around the periphery of a large disc. The disc was revolved intermittently by ratchet and pawl, and a shutter was arranged to cover each picture during substitution. Heyl exhibited his "Phasmatrope" at the Academy of Music in Philadelphia on February 5, 1870, to an audience of about 1600. His motion picture of eighteen separate poses attracted much attention. Ottomar Anceutz in 1889 further improved this type of device, which in principle dates back to the Phenakistoscope of 1831.¹⁷

In 1870 E. J. Marey, and two years later Edward Muybridge, independently commenced their famed studies of motion, though neither man did much toward recreating the illusion of motion. Both were concerned with the biologic study of motion; however, due to the extent of their researches they have become by tradition connected with motion picture history. Even though their primary aim was to photographically record the progressive poses and muscular movements of moving bodies, they later turned their attention to the problem of showing their pictures consecutively. Muybridge did his photographing with a battery of cameras side by side, which resulted in the illusion of his subject standing still while its limbs moved, as when a person walks on a continuous belt. Marey in 1882 invented a "Photographic Pistol" with which he could successfully photograph images on the same plate through the same lens as is embodied in the successful cinema equipment. However, this also was limited, since

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QUESTIONS AND ANSWERS

(Continued from Page 17)

eye strain on the audience. Hence the reason for a two- or three-blade projector shutter.

7. Are duplicates from an original 8 mm. reversal film available?

At the present time, this service is not available by the film manufacturer. Nevertheless, there are certain laboratories prepared to do this work.

8. Can 8 mm. reductions be made from 16 mm. film?

Yes. Certain laboratories specialize in this work.

9. Is 8 mm. positive stock available for title work?

Yes. This positive is in regulation 16 mm. width, but has the special 8 mm. perforations. It will fit the Eastman Cine-Kodak 8 mm. camera models, as well as the Keystone 8 mm. camera. After development, the 8 mm. positive stock must be split in two in order to run it on an 8 mm. projector. A Film Splitter is available for this purpose.

10. Does 8 mm. positive stock possess the same speed as 16 mm. positive?

Yes. There is no difference between the two films, as far as speed is concerned. For example: If the F/8 is the correct exposure for a 16 mm. posi-

tive title, the same aperture, F/8, would also be correct for an 8 mm. positive.

11. In making tests of a home-made title, is it necessary to screen the results?

It is advisable to do so. While many an amateur has sharp eyes and **may** be able to detect a "down hill trend" in a title by viewing it through a film viewer machine, it is far better practice to screen the title on a good size screen. If your title will pass this test which, after all is the only good one, you'll know you're making real titles.

12. How much film cement should be applied to make a satisfactory splice?

Only enough to spread a thin coating on the scraped portion of film. Too much cement makes a bad splice and a messy one.

As a service to amateur movie-makers, we extend a cordial invitation to write in questions which will be replied to in this department. Address all such letters to:

Questions and Answers Department
THE INTERNATIONAL PHOTOGRAPHER
1605 North Cahuenga Avenue
Hollywood, California

WHAT IT TAKES TO MAKE A GOOD SPLICE

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layer of the solution. As quickly as possible bring the two film ends together, under pressure, and allow about ten seconds for the initial set of the cement. After this, remove pressure and wipe off any excess cement from both sides of the film.

Fifth—Neatness. This attribute of a good splice can only be obtained by exercising extreme care in the whole cycle of operation of splicing, with particular emphasis on proper scraping, applying cement carefully, and quick removal of any excess amount. In the case of sound film, neatness is extremely essential; for as you know, the sound track is scanned by exciter lamp and photo-electric cell in the process of sound reproduction. Any smudge or buckling splice greatly alters, if only temporarily, the quality of the sound coming from the screen.

Speaking of sound, there are special precautions to observe in splicing both types of talking picture film. All the foregoing that has been mentioned for splicing silent film applies to sound film and more!

Sound-on-disc, while being the earlier method for sound reproduction, is still quite largely employed in the amateur field of cinematography. We will even venture the opinion that in the case of 8 mm. sound-on-disc is admirably suited and we may yet see it used for the benefit of the users of this miniature movie film. As is well known, sound-on-disc film is perfectly synchronized to its companion disc, from first frame to the last frame of the film. Any damage to this film, even amounting to only three or four frames, must be replaced by an equal number of frames of blank film. Unless this is done, correct synchronization will be lost between film and disc; from the point of the break the picture will be ahead of sound and will so continue until the end of the reel. Insertion of the correct number of blank frames, while splicing, will overcome this difficulty, and will only cause a momentary blank screen when projected. Perhaps you will

recall the earlier Vitaphone professional movies, with such a patch, when the picture disappeared for a second or so while the sound continued from the blank screen speakers.

Happily enough, sound-on-film can't lose synchronism and thus becomes almost as simple to splice as silent film. The sound recording is spaced on the sound track next to the pictures, so when damage occurs both are deleted from the reel. Nevertheless, since with this film we are dealing with a sound track and a photocell which "observes" everything, the sound track should be shaded at the splice to avoid any annoying "plop" from the sound screen speakers, as the double-thick film splice runs through the projector sound gate past the exciter lamp and photo-electric cell. Shading of a 16 mm. sound splice should be done carefully and very neatly, and painting it out is best accomplished by using lacquer. Thus shading a sound splice reduces the sound level to an insignificant intensity, but does not last long enough to be perceptible to the audience.

Although in splicing any type of film, sound or silent, the position of the overlap of the splice is seldom observed in amateur movies, it is worthy of note. No matter how well a film is spliced, there remains the possibility of the splices opening slightly at the edge. Referring to Figure 2, it will be noted that during the projection if the open edge faces, as at A, it may tear apart. But if it faces, as at B, there is less likelihood of this happening. In splicing therefore this position of the overlap should always be observed, bearing in mind likewise that reversible and negative-positive system films face different ways when they are screened. All original reversible film **and** reduction prints made from 35 mm. must have their respective emulsion face towards the screen. But all contact prints made from 16 mm. negative **and** duplicates of original re-

(Turn to Page 25)

STAR PERFORMER

SUPER X delivers unparalleled photographic quality to the screen. That is why it continues to hold its position as star performer among negative motion picture films. That is why it plays a part in most of the feature pictures released in the world's leading movie-producing country. Eastman Kodak Company, Rochester, N. Y. (J. E. Brulatour, Distributors, Fort Lee, New York, Chicago, Hollywood.)

EASTMAN SUPER X
PANCHROMATIC NEGATIVE

The Cinematographer's Book of Tables

By FRED WESTERBERG

APPARENT VELOCITY OF SCREEN IMAGE

THE EFFECT OF MINIATURE SCALE AND CAMERA SPEED ON THE APPARENT VELOCITY OF A MOVING IMAGE ON THE SCREEN

Camera Speed in Pictures Per Second	MINIATURE SCALE						
	1	1/2	1/3	1/4	1/6	1/8	1/12
	APPARENT VELOCITY OF SCREEN IMAGE COMPARED TO REAL VELOCITY OF OBJECT WHEN PHOTOGRAPHED						
192	1/8	1/4	3/8	1/2	3/4	1	1 1/2
144	1/6	1/3	1/2	2/3	1	1 1/3	2
96	1/4	1/2	3/4	1	1 1/2	2	3
72	1/3	2/3	1	1 1/3	2	2 2/3	4
48	1/2	1	1 1/2	2	3	4	6
36	2/3	1 1/3	2	2 2/3	4	5 1/3	8
24	1	2	3	4	6	8	12

GEAR-BOX CRANKING SPEEDS

Camera Speed in Pictures Per Second	Relative Camera Speed	GEAR-BOX RATIO USED			
		1-3	1-4	1-6	1-8
		REQUIRED CRANKING SPEED IN TURNS PER SECOND			
192	8X	....	....	....	3
144	6X	....	....	3	2 1/4
96	4X	....	3	2	1 1/2
72	3X	3	2 1/4	1 1/2	....
48	2X	2	1 1/2	1	....
36	1 1/2X	1 1/2	....	....	....

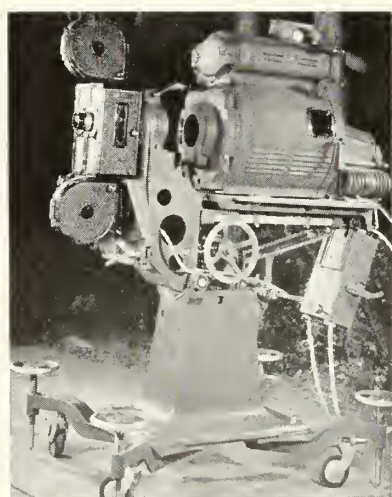
Based on Normal Camera Speed of 24 Pictures per Second.

REAL VELOCITY OF OBJECT

CHECKING THE REAL VELOCITY OF A MOVING OBJECT WHETHER ACTUAL SIZE OR BUILT TO MINIATURE SCALE

VELOCITY		DISTANCE TRAVELED		
Miles Per Hour	Feet Per Second	25 Feet	100 Feet	1 Mile
		ELAPSED TIME IN SECONDS		
2.50	3.667	6.80	27.2	1440
3.00	4.400	5.68	22.8	1200
3.50	5.133	4.87	19.4	1029
4.00	5.867	4.26	17.0	900
4.50	6.600	3.79	15.2	800
5.00	7.333	3.40	13.6	720
5.50	8.067	3.10	12.4	655
6.00	8.800	2.84	11.4	600
6.50	9.533	2.62	10.4	554
7.00	10.267	2.43	9.7	514
7.50	11.000	2.27	9.0	480
8.00	11.733	2.13	8.5	450
8.50	12.467	2.01	8.0	424
9.00	13.200	1.89	7.6	400
9.50	13.933	1.80	7.2	379
10.00	14.667	1.70	6.8	360
11.00	16.133	1.55	6.2	327
12.00	17.600	1.42	5.7	300
13.00	19.067	1.31	5.2	277
14.00	20.533	1.21	4.9	257
15.00	22.000	1.14	4.5	240
16.00	23.467	1.06	4.3	225
17.00	24.933	1.00	4.0	212
18.00	26.400	.95	3.8	200
19.00	27.867	.90	3.6	190
20.00	29.333	.85	3.4	180

For higher velocities move decimal points to the right in first two columns, to the left in the other three columns.



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Stage - Space - E'cts.

TEAGUE PROCESS

HOLLYWOOD

Ashcraft Automatic Control Company

(A New Line of Arc Equipment Coming Up)



HE use of arc lamps is daily coming into more favor for lighting motion picture sets. After several years of comparative disuse the inherent merits of this form of light are again being recognized and, today, we find all available arcs in use. In the effort to supply this hard light the only thing the studios could do was to resurrect the arc lighting equipment which was built many years ago and which they have already on hand.

In spite of the excellent mechanical performance of this old equipment the fact remains that it is not in any way adapted to modern studio practice. We may point out that these lamps produce a quality of light, which, although well adapted for exposing the old orthochromatic film of silent picture days that today's picture production demands a quality of light in an entirely different key, namely: The use of incandescent light has crystallized photographic practice in a color key towards the lower end of the spectrum.

Also, although the efforts of the lighting men to silence the formerly noisy mechanisms has proven to be successful in a measure, we feel that these efforts have been of a makeshift nature which have been necessary in an effort to bring the old equipment up to date, or at least to make the old equipment conform in some measure to the rather rigid requirements of sound picture practice.

The answer to this situation would be that arc equipment be placed at the disposal of the studios especially designed to meet today's requirements. The characteristics of this new equipment should be, first: To project a quality of light correctly color balanced for the exposure of modern superspeed panchromatic film; and second, to conform as closely as possible to the mechanical practice existing today in lighting departments.

This technique has undergone a vast change since the old days when noisy, bulky and inefficient arc equipment was in vogue. Today, due to several years use of the perfectly silent and light weight incandescent lamp, a new order of studio practice brings the expectancy by lighting men that arc equipment offered for their use must be highly efficient, silent and light in weight also.

Earnest efforts on the part of Ashcraft Automatic Control Company to reconcile the arc lighting situation to modern practice has resulted, after many months of development, in the production of an arc spotlight built to conform as closely as possible to the requirements of today's sound picture needs. The manufacturers of this new lamp have endeavored to produce a lamp so efficient as to surpass both the former arcs and incandescents in light value while drawing an extremely small amount of current and to reduce the weight of the new lamp to less than half that of existing equipment.

Considerable success has been attained in the production of a new quality of light for this lamp, which shall give a correct color rendition of full

range for panchromatic film. This means that while the low key lighting of the incandescents has been retained, the complete range of color into the greens and blues is covered.

Not the least of the valuable features of this new lamp is the perfectly silent fully automatic feed which has been adopted. This permits the lamp to be burned without attention for retrimming throughout an entire day's shooting.

The makers of this new line of arc equipment have uncovered a valuable fact relating to the arc flame proper. The use of a full automatic feed permits the use of carbons which burn with a small extremely steady flame of such inherently silent nature as to preclude the use of chokes or other silencing equipment for eliminating the arc noise produced by line current ripple. When one considers the weight of a choke coil (about 100 lbs.) used on each arc lamp of the present type to reduce the noise below the audible range, it can be seen that with the use of this new type of equipment the weight of all these auxiliary devices can be eliminated.

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Mr. Le Heart's artistry is internationally known. In this art his judgment is authoritative.

Art Work On Photographic Prints

Coloring With Oil Paints

By AVENIR LE HEART

LACK and white photographic prints of suggestive interest quite often tempt the photographer to enhance them by additional art hand work. Many sorts of art expression are at service for the photographer that may be applied on the photographic image; of these the transparent coloring in oil paints is the most popular as well as the most expressive. Through intelligent conception of such coloring the black and white print acquires what might be termed a natural appearance.

Hand coloring of prints is generally regarded as an art that is easily learned and widely understood and accessible to almost any one who might happen to have a tuft of cotton and a tube of paint. The art of oil coloring contains its own "tricks of the trade" which when applied elevate the standard of such work to the level of equality with other works of art.

As there is no space to write a complete treatise on hand coloring of prints, a few important highlights of its technique can be shared with the reader. The kind and the quality of paints that are most suitable for this work, the surface of the photographic papers most beneficial for oil acceptance, the printing of a print in quality for coloring and a few illustrations on color effects upon the black and white print are the highlights of this issue.

Almost any oil prepared paint is good for hand coloring of prints. The list of tints and shades of various colors found in tubes of art oil paints is more than sufficient to satisfy the color artist. While most of the oil paints are transparent when properly applied with cotton over the photograph, some of the paints known as "lake" colors are more so and they present very little effort of retaining the perfect visibility of photographic details from under the color. The commonly known as "photo oil colors" are mostly composed of the selections of lake colors and, therefore, are quite answerable to the purpose of anyone who desires to do his own hand coloring of prints.

The surface of the photographic image or the grade of paper should be considered in favor of coloring. The paper must be reasonably soft in order to accept the color pigment and retain it after the oil is dry. The original tint of the paper itself hardly bears any effect upon coloring, although the papers of buff tint finish are more preferable, due to their warmth.

Since the principle of oil tinting is the application of paints in transparency over the image, the photographic quality of the print must be perfect as possible if a good job of coloring is anticipated. A weak

photographic print will show itself through the color and the ultimate effect will be a weak coloring. The same in reverse applies to the excessively printed image. A good print is a good ground for coloring.

Preparing a print in chemical toning for the purpose of coloring hardly justifies, since the paints in their variety of tones and shades are a better source for obtaining the desired color tonation. Skillful arrangement of colors, held to one key of color, will more than better the effect of preparatory toning.

The ground substance of a black and white photographic image is the tonation ranging from perfect white to the utmost black. These degrees of blackness are permanent, non-removable and solid and placing the color over such blackened spaces should be seriously considered. Forcing a light luminous color over an area of the photographic blackness is quite futile and should be substituted by an illusionary approach. It is quite impossible to expect the appearance of a light green shade of color, the natural shade of foliage, to register correctly over a photographically darkened area of the print. To offset this handicap and in order to create the pleasing semblance of foliage it is necessary to soften the blackness of the foliage on the print with warm brown throughout as an under coloring coat and then to touch the highlights of foliage with warm yellow. It is known that yellow mixed with black photographic undertone will give the pleasing appearance of green.

The lustrous effect of red, especially red flowers, is quite often lost due to the photographic undertone of black. The nearest remedy of bringing the semblance of fiery red is to tint the red flowers with water soluble red dye and over it to touch with deeper shade of red oil paint.

Coloring of a daylight sky which conventionally appears to be a blue, should hardly ever be tinted in a shade of pure blue. A slight addition of lemon yellow mixed into the pure selected blue for the sky will produce the shade that will be pleasing and in perfect harmony with the rest of colors on the picture.

In coloring portrait prints the correct tone of flesh quite often presents the major difficulty. As the undertone of photographic white and black of the flesh differs in every print, so the quality or mixture of flesh tint should differ in coloring. A tube of flesh tint might serve the purpose in coloring of any print if the quality of coloring is just a mere suggestion, otherwise preparation of a suitable mixture of flesh tone is recommended. The color of flesh is orange which is modified by the addition of either yellow dark or red, if necessary it is diluted with either mixing medium or white.

Opaque or solid painting with brushes over the paper prints is not recommended generally. The sensitive surface of the paper is too smooth to accept the brush strokes and they might appear in too great

a contrast with transparent tinting throughout. On the other hand certain studies may gain in coloring if skillfully touched with opaque brush work. On the views such places that may be touched with the brush or flowers, foreground bushes, stumps, rocks—in fact, the items of attraction that are not occupying any amount of space and are well pronounced in their outlines. On the portrait studies the details such as eyes, eyelashes, the upper lip and jewelry, if there is any, may likewise be effectively touched in opaque with brushes. The most important consideration in the art of coloring should be given to the use of colors in harmonious combinations. The best of workmanship is lost if the colors on the study are clashing and in violation with the laws of color harmony. The theory of color harmony is

very simple and can be easily learned by acquainting oneself with the color harmony spectrum and its practical applications.

Coloring photographs by hand has been a by-product or an allied art of photography since its birth. In the days gone by it has been the privileged art of an artist, now it has grown to the size of an industry in itself with a great number of people occupied in performing it. It is widely known as a commercial art, although it is taken by a great many as an enticing pastime or fascinating hobby. Everyone who performs this work, by its conception, is entitled to be classified as an artist. The name of an artist would be justly applicable if everyone involved in this good work would be conscientious in giving it its due by elevating its standard of quality to the higher grade of betterment.

WHAT IT TAKES TO MAKE A GOOD SPLICE

(Continued from Page 20)

versible film have their film base—shiny side—face the screen. Therefore, to place the overlap correctly, we shall have to consider the splicer that is used, and the direction of travel of the film on the rewinding board on which the splicing is done. With the majority of splicers, the film is placed emulsion-side upwards; the left film end is scraped, and the right film end is cemented over it. Thus, for proper overlap of a splice, when patching original reversible film **or** reduction prints, work from right to left. That is, a supply reel of film should be placed on the right-hand rewind spindle, with the tops of the pictures pointing to the left-hand rewind spindle; this direction of travel must be maintained from the beginning to the end of the reel. On the other hand, however, when splicing contact prints made from 16 mm. negatives **or** duplicates of original reversible films, work from left to right

on the splicing board; the tops of these films must point in the direction of the right rewind spindle.

Cleanliness is very necessary in making good splices and should be observed at all times to protect film from finger marks and marks during splicing. As a protection against finger marks, it is advisable for the amateur to wear gloves—a pair of cheap white cotton gloves serves nicely. Do not allow the film splicer to become rusty or allow film cement to accumulate on the metal parts thereof. After having finished splicing, clean the splicer thoroughly. Dried cement is quickly removed from the metal parts by painting with film cement and wiping off with a dry cloth.

The knack of good splicing is well worth the initial practice it takes to acquire. For, in all your movie-making activities, you'll have frequent use for that old reliable—the Film Splice.



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Dependable Equipment At Prices Within Reason.



THE ARCHAEOLOGY OF THE MOVING PICTURE

(Continued from Page 19)

he could only photograph twelve pictures on the plate.^{18 19}

Now the Living Picture awaited a successful photographic medium. By a combination of the contributions of many men, the general mechanics for the portrayal of pictures in motion were achieved. No one man may be said to have invented the principle of the motion picture but each pioneer contributed a detail. Bands to carry pictures were suggested by Stampfer in 1833; photography was used by Plateau in 1849, who, while blind, magnificently hoped to create living pictures; Brown in 1869 invented several intermittent devices, one of which was a star and pin similar to the Geneva or Maltese Cross intermittent now used so generally. At this time Brown used a two sector shutter as is used on projectors today. Janssen in 1874 evolved a photographic gun camera which used a single lens for taking a series of pictures on one plate. Even the word "Kinema" had been in use for a great number of years.

The successful motion picture awaited the rollable celluloid film, which was to be probably the greatest single contribution of them all. Hannibal Goodwin conceived the idea which he patented in 1887 as United States Patent No. 610,861, although the patent was not reduced to commercial application. That distinction goes to George Eastman and his co-worker, Harry Reichenbach. On April 9, 1889, Harry Reichenbach, with Eastman as assignee, applied for a U. S. Patent which was granted on December 10 of the same year. That patent gave practical celluloid photographic film to the world. It may be said to be the birthday of the celluloid and silver medium of our theatres, because on that day the motion picture was made possible. In the meantime, LePrince, Friese-Greene and Edison had undertaken, unknown to each other, the problem of making pictures live.

The Successful Cinematic Picture

Who, definitely, perfected the successful motion picture equipment? If that question is asked an American his somewhat noncommittal reply will be Thomas Edison, while an Englishman will maintain that Louis A. A. LePrince or William Friese-Greene invented it. A Frenchman will point to the work of Louis and August Lumiere, and a German will believe that Oscar Messter made it possible. The importance of the contributions of these individuals to the art is a disputed point which need not be considered here. Let it suffice to summarize each of their achievements from which the critical student will deduce that each served to crystallize in their own country the age-old idea of living pictures.

LePrince was granted a British Patent No. 423 on November 16, 1888, on a one and multiple lens camera, or "receiver" and projector, or "deliverer." At this time he was granted an American patent from which the claims for the single lens camera were not granted, due to the interference of the earlier patent of Du Mont. Subsequent to the granting of these patents he made a camera having sixteen lenses from the drawings that accompanied the patent specifications. These lenses were arranged in two parallel rows of eight. Each of the lenses of the first series were to consecutively photograph, while the sensitized paper or film band facing the other eight was being moved forward in readiness for

their exposure. Pictures taken in this manner from two viewpoints would not be steady on the screen, although it would be possible to get stereo effects if both rows of lenses exposed simultaneously; however, this was not LePrince's intention.


At an unestablished later date LePrince made a single lens camera which he evidently used in taking the pictures exhibited at the Paris Opera House on March 30, 1890. At this time, according to a signed statement by Ferdinand Mobisson, secretary of the National Opera, LePrince had a successful showing. The work of LePrince is significant and had he not unaccountably disappeared on September 26, 1890, the course of motion picture history might have been filled with his name.

William Friese-Greene first started working on the motion picture problem sometime in 1883. He began with a series of experiments in recording motion on glass plates, which were to be shown in the "Biophantoscope" device made by J. A. Rudge. After the death of Rudge, Friese-Greene continued his experiments and in 1885 demonstrated some pictures taken spirally on glass. These were not a success, so he tried to photograph on paper bands made transparent with castor oil. On June 21, 1889, he and Mortimer Evans applied for a patent in England which was accompanied by conceptional drawings made by Evans. The date of the construction of this camera covered in the patent has not been established, although it evidently was at a later date if we may judge from the Scientific American Supplement of April 19, 1890, page 11921, in which is described the mechanism of his camera and closes with: "Some years ago he exhibited a little optical lantern which cast four pictures in succession upon the screen, and before one was quite removed, the next was superimposed."

"By an improvement upon that lantern, now in the course of manufacture, Mr. Greene hopes to be able to reproduce upon the screen, by means of photographs taken with his machine camera, street scenes full of life and motion; also to represent a man making a speech, with all the changes in his countenance, and at the same time to give speech itself in the actual tones of the man's voice by means of the loud speaking phonograph."

Though he worked hard to achieve the motion picture, his contributions were chiefly of a theoretical nature and had little importance in actual screen history.


(Concluded in March)

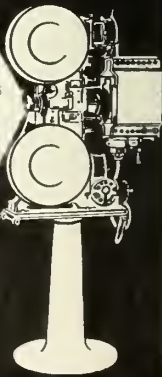


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Recent Photographs and Sound Patents

By ROBERT FULWIDER

Registered Patent Attorney
(Wilshire at La Brea, Los Angeles)

2,022,665—Plastic Sound Reproduction System. W. H. Halstead, White Plains, N. Y.

2,022,768—Process of Printing Copies from Lenticular Film. Gerd Heymer, assignor to Agfa Ansco Corp.

2,022,902-2,022,903 — Acoustic and Cinematographic Apparatus. Household Cabinet for Motion Picture Projection. A. A. Thomas, assignor to R. C. A.

2,022,933—Photographic Printing (Lenticular). J. Eggert and Gerd Heymer, assignors to I. G. Farbenindustrie, Germany.

2,022,934—Film Editing and Splicing Apparatus. Arthur R. Guth, New York.

2,022,978—Objective for Taking, Printing and Projecting Lenticular Films. Kurt Rantsch, assignor to Opticolor Co., Glarus, Switzerland.

2,023,065—Motion Picture Apparatus. F. Conrad and C. Aalborg, assignors to Westinghouse Electric & Mfg. Co.

2,023,103—Motion Picture Apparatus. Walter H. Schulz, assignor to Westinghouse Elec. Mfg. Co.

2,023,348—Apparatus for Optical Printing. Denes von Mihaly, Berlin, Germany.

2,034,411—Motion Picture Camera. T. M. DeLaGarde, Los Angeles, Cal.

2,023,493—Driving Mechanism for Motion Picture Cameras. Leland H. Stanford, U. S. Army, Fort Shafter, Hawaii.

2,023,581—Sound Picture Projector. Omer Glunt, assignor to Bell Telephone Co.

2,023,649—Device for Recording and Reproducing Films. William Six, et al., Eindhoven, Holland.

2,023,770—Sound Film Equipment. Kurt Riess, et al., assignors to I. G. Farbenindustrie, Germany.

2,024,080—Light Source for Recording Sound on Film and Method of Producing Same. Stewart Whitman, assignor to Whitman Sound System, Dover, Del.

2,024,081—Composite Picture Mat. Frank Wilham, Los Angeles.

2,024,522—Color Photography. G. B. Harrison, assignor to Dufaycolor, Ltd., London, England.

2,024,563—Process for the Reproduction of Sound Recorded by Means of Photograms. R. Berthon, assignor to Kislyn Corp., N. Y.

2,024,608-2,024,609—Sound and Picture System. E. H. Smythe, assignor to Bell Telephone Labs.

2,024,627—Edge Marked Motion Picture Film. John Crabtree, assignor to Eastman Kodak Co.

2,024,644—Process and Solution for Treating Photographic Images. K. C. D. Hickman, assignor to Eastman Kodak Co.

2,024,660—Automatic Film Threading Control. W. A. Riddel, assignor to Eastman Kodak Co.

2,024,661—Apparatus for Controlling Photographic Exposures. Odon Riszdorder, Budapest, Hungary.

2,024,869—Apparatus for Motion Pictures. N. Nyström, assignor to United Research Corp., Queen County, N. Y.

2,024,942—Sound Recording System. J. A. Miller, assignor to United Research Corp., New York, N. Y.

2,025,327—Method and Apparatus for Producing Composite Pictures. C. S. Briel, assignor to Cinema Developing Co., Chicago, Ill.

2,025,366—Portable Sound Film Reproducing Apparatus. Denes von Mihaly, Berlin, Germany.

2,025,374—Sound Transmitting System. L. G. Bostwick, assignor to Bell Telephone Co.

2,025,608—Method and Apparatus for Recording and Reproducing Mechanical Vibrations. R. L. A. Nublat, Paris, France.

2,025,658—Process for the Production of a Colored Sound Film. Bela Gaspar, Berlin, Germany.

2,025,671—Cinematographic Film in Natural Color. G. A. Raguin, assignor to Societe Lumiere, Paris, France.

2,025,675—Light Sensitive Layers. Oskar Sus, Wiesbaden, Germany.



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CINECAMERA FORNIA

By WILLIAM KISLINGBURY

IT MAY be "The Best Movie in Town," one of the ten best, or rated four stars with an All-Star cast, "The Gem of the Program," or even have attained an Academy award, but when the laboratory has finished summing it up the result is always—just so much footage.

With a maximum measurement of one thousand feet in a roll of positive raw stock and a length in reels of cut negative varying from seven hundred and fifty to not more than nine hundred and ninety-five feet the left-over remnants of unexposed film in release printing would amount to a tremendous loss if it were not for the ingenuity of laboratory superintendents in making use of short ends.

All major industries take pride in the results obtained by staffs of experts dedicated to reclamation and are justly proud in boasting of any new methods devised to curtail waste. Comparable on a basis of economy of operation the motion picture laboratory has an enviable lead over all other fields of commercial enterprise, for with capable management there is no such thing as waste.

Even "The Face on the Cutting Room Floor," which has long been accepted as an adage of Hollywood extravaganzas, may be trampled upon and denied a public showing; yet, to the laboratory, this ill-fated castaway has a reclamation value for a silver content forming the image and for its supporting base of celluloid convertible into lacquer.

Fortunately for the separate sound track, which is almost devoid of any appreciable amount of silver when matted down to the track area, the lacquer by-product is now the more valuable of the two. A great deal of experimental work has been necessary in finding a suitable method to clean the emulsion from the celluloid and make it a commercially feasible process. Hypo, when ready to discard as a fixation for pictures, is thoroughly permeated with silver particles and continues on in fixing up the profit sheets with a high yield in metal. Even the special Bakelite spools, the core of a roll of stock, can be shipped back to the manufacturer for redemption.

With silent pictures the using up of short ends proves quite a simple procedure, for with a suitable means of fastening or stapling the two ends of film together the negative can be "pulled back," allowing a fresh start, and then after processing the two ends, matched and spliced to the exact frame. Synchronization in the composite printing of sound pictures has made this method impractical. Splicing into full length rolls (in the dark room) has now become the most satisfactory practice in printing up short ends. With an experienced and careful splicer the danger of breakage in the developing machine is negligible, but particularly with a dried out and brittle stock. It is worth the extra precaution to reinforce with a few frames of clear leader attached through the splice and anchored to the celluloid surface with two Mercer Metal Patches.

For best results in release printing the splicing should be controlled to insure a registration with the negative frame line so that when projected it will not become an annoying factor by flashing



across the screen. A sprocket mounted on the splicing machine and marked off in frames is the best present method of establishing a starting mark by which the printer can be threaded "in frame" with relation to the splices contained in a roll. With the inked-in key numbers placed each foot along the edge of positive film by the manufacturers it is also possible to use the perforation following the last numeral of the group nearest the point at which a splice is to be made and slipping this perforation over a guide pin match the strip of film along a gauge marked off in frames.

The task of splicing raw stock could be expedited considerably if the manufacturers would incorporate in numbering devices an attachment to ink in a frame line along the perforation margin which would be discernible before development.

DIRECTOR BUCK JONES

In No. 11 of the Buck Jones series for Universal release, just completed, the popular Wild Western actor not only played the star part but also directed the picture. With a six gun in one hand and a megaphone in the other, the irrepressible Jones put the picture through in record time. The title is "For the Service," and the locale is West Texas in the seventies. Art Marion shot the stills.

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HOLLYWOOD STUDIOS USE THEM IN EVERY PRODUCTION

16 MM. FILMS IN LARGE AUDITORIUMS

Lt. Commander George Noville, second in command of the recent Byrd expedition to the Antarctic, took over 64,000 feet of 16 mm. film to record the activities of the expedition. With a Bell & Howell 1,000-watt 16 mm. auditorium projector, which he carries with him, he is now, all over the United States, giving illustrated lectures of his Antarctic experiences. In 1926 Noville flew with Byrd over the North Pole and in 1927 accompanied him on the trans-Atlantic flight to Europe. Noville also participated in the first navy round-the-world flight and was first superintendent of the United States transcontinental air mail.

Capt. Irving Johnson, just returned from a trip around the world in his ninety-foot schooner, The Yankee, is also using the same type 16 mm. projector to show films in connection with his lecture work. Captain Johnson has shown his motion pictures to audiences of more than 3,400 people with fine results. One of these big audiences was in Eastman Auditorium, Rochester, N. Y., and he has just received an invitation for a repeat engagement.

Capt. John Craig, who has visited 39 different countries in the last six years, making adventure motion pictures, is another convert to this sort of 16 mm. projector for lecture work, as is Richard Finnie, the brilliant Canadian traveler and lecturer. Mr. Finnie is this season presenting a new illustrated lecture, "Wandering Through French Canada," the motion pictures for which he took entirely in 16 mm. Part of the film is in natural color. With the 1,000-watt 16 mm. projector he attains brilliant color pictures on the screen, and movies in color are a genuine asset for any lecturer who uses illustrative material. Mr. Finnie could not have taken natural color movies in 35 mm. except at almost prohibitive expense.

Other well-known lecturers, including Arthur C. Pillsbury of "In and Under the South Seas" fame, are going into 16 mm. movies. Pillsbury, we understand, will soon announce all his lectures available in 16 mm. He will carry a 1,000-watt projector with him.

The National Geographic Society in Washington has purchased one of these machines to take care of lecturers who have 16 mm. films. One of the finest lectures presented by this organization was illustrated with 16 mm. films projected by a Bell & Howell 1,000-watt projector. The lecture was given in Constitution Hall, which seats upwards of 4,000 people.

In a recent issue of Program Magazine, which is devoted to the lecture field, is an editorial by James B. Pond, to the effect that the new B. & H. machine has solved the projection problems of any lecturer who uses motion pictures.

Besides affording large-sized (up to 20 feet wide), brilliant pictures, the 1,000-watt 16 mm. projector can use 1,600-foot reels and thus show a full hour of pictures without change of reels. A trained operator is not necessary, for all that is needed is to start the projector going and it will run right along until the entire 1,600 feet of film are projected.

8 MM.

Extending the scope of the 8 mm. Filmo cameras, Bell & Howell Company announces as available for both the straight and double 8 cameras a new 1-inch F 2.7 Taylor-Hobson Cooke lens in either universal or focusing mount; also a Taylor-Hobson fast 1-inch F 1.5 lens in focusing mount. On an 8 mm. camera, a 1-inch lens compares in magnifying power with a 2-inch lens on a 16 mm. camera.

EASTMAN TEACHING FILMS GOING STRONG

In the story appearing in the January, 1936, issue of International Photographer covering the activities of Capt. Herford Tynes Cowling, a statement was included indicating that Eastman Teaching Films Program had been discontinued.

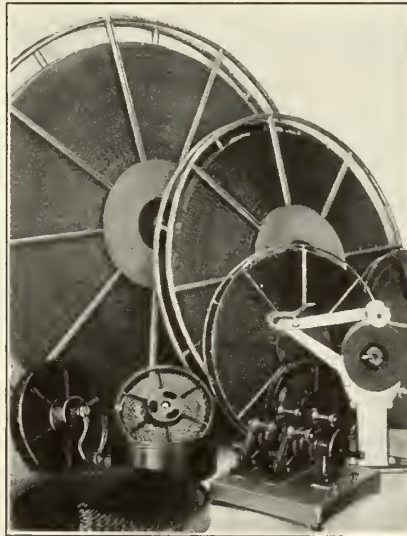
A letter just received from Mr. W. H. Maddock, manager of Eastman Teaching Film Division of the Eastman Kodak Company, points out that this program is still in active operation and that, while production was drastically curtailed in 1932, owing to economic conditions existing at that time, a number of new films have been added each year and that the films continue to enjoy a wide sale and active use in hundreds of school systems throughout the country.

It is generally known that the Teaching Films prepared and sold by the Eastman Kodak Company have been one of the most important contributions to the field of visual education and we are therefore glad to report that they are still alive and going strong.

FILM SPECIALTIES

Film Specialties, of El Monte, Calif., caters to 8 mm. owners. This firm is supplying a variety of emulsions in the popular 8 mm. size, including super sensitive panchromatic, color film, titling film, etc.

In addition, many accessories for the 8 mm. owner have been developed and are being marketed. Full information may be secured by addressing Film Specialties, P. O. Box 111, El Monte, Calif.



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MISCELLANEOUS

THE INTERNATIONAL PROJECTIONIST, a monthly magazine published in the interests of the projectionist. Interesting, instructive. Yearly subscription U. S. and possessions, \$2; foreign countries, \$2.50. James L. Finn Publishing Corp., 580 Fifth Ave., New York.

COMPLETE COURSE IN FLYING—If interested in aviation, see Roy Klaffki, 1605 North Cahuenga Ave., Hollywood.

WANTED—To know of the whereabouts of motion picture relics, documents, or equipment of a historical nature for Museum purposes. Write Earl Theisen, care of International Photographer, 1605 Cahuenga Ave., Hollywood.

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Applying Wide-Range Principles to High-Power Lamps

By ELMER RICHARDSON

Mole-Richardson, Inc.



The industry's first wide-range lighting unit was the Mole-Richardson "Junior Solarspot," which was introduced early in 1935. In it, for the first time, the power of a reflecting Sunspot and the wide range and ideal beam of a condenser-spotlight were combined in a single unit. For the first time, a motion picture lighting unit was engineered specifically to meet the problems of the camera, without paying tribute to traditions established in searchlighting and theatrical spotlighting practice. The success of the "Junior Solarspot" since its introduction is almost too well known to

repeat, for it has received an enthusiastic welcome in every studio in the industry, and in many quarters is supplanting the older "eighteens" as the standard 2,000-watt unit for all-around service.

The success of this 2,000-watt unit brings with it a demand for a similar wide-range lamp of higher power. This demand is now answered by the introduction of the "Senior Solarspot," a 5,000-watt companion to the "Junior," based on the same optical principles, and bearing the same relation to the 24-inch Sunspot that its running-mate does to the "eighteen."

Briefly, the new lamp (which is officially termed MR Type 214) is a 5,000-watt wide-range spotlight, using a G-64 C-13 (clear) bi-post Mazda globe. The optical system consists of a "Morinc" lens 14 inches in diameter, in combination with a spherical mirror placed behind the globe to utilize the rearward emanations. The lens is made of special, heat-resisting

glass, and due to its large diameter and short focal length, works at a speed of approximately f:0.7. This lens, like that of the smaller unit, is the result of many months of research carried on jointly by Mole-Richardson engineers and optical experts from the firm responsible for the 200-inch eye of the new Palomar Mountain telescope.

In its physical layout, the "Senior Solarspot" resembles its companion, the "Junior." Due to the optical principles used, it is somewhat smaller than previous 5-KW units. The housing is an aluminum-alloy casting, with ample provision for ventilation. The controls are conveniently grouped at the rear and right-hand side; the main switch is at the operator's right hand, with the tilt locking-handle carried through the casing to a convenient location at the rear of the barrel, and the flooding crank in its accustomed place below. Access to the globe is through a large door at the back of the lamphouse.

The general performance of the lamp is similar to that of the "Junior Solarspot." The beam may be concentrated to a tight spot-beam of 10 degrees or less, and flooded out to a spread of over 44 degrees. The intensity of the concentrated beam compares favorably with that of conventional 5-KW units, while the overall intensity at the wider spreads is definitely superior. While in reflector-type spotlights there is at the wider beam-spreads a variation in intensity between the edges and the center of the beam which may be as great as 85 per cent, with the dark center growing more and more objectionable as the beam is flooded, in the "Senior Solarspot," even at its widest spread (nearly double the maximum usable flood of a Sunspot), the variation between center and edges is scarcely visible.

Like its smaller companion, the lamp may be fitted with an Iris-diaphragm which permits many new effects, including changing the intensity without altering the size of the spot, dimming effects without the use of dimmers or alteration of the color of the light, etc. It is, in fact, a really modern lamp, engineered to meet the requirements of today's cinematography.



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(With sauce for those who like it.)



By
**Robert
Tobey**

HOLLYWOOD HONEYMOON

(A novel novel of a thousand and one nights in a daze)

by
R. THRITIS

Synopsis of preceding chapters, I guess:

Lili Liverblossom, Periwether Murgle, Willy Nilly, Nelly Nilly, Bill, and a ghost whose name we don't yet seem to know, have become pretty well involved in a lot of toil and trouble. Now you can fuss with the back issues of the magazine if you want to, but our job is to keep things moving, and here we go.

CHAPTER XVI—A Ledged Romance

"You mean to say you're cold, y' poor kid?" inquired the ghost, still ripping along about seventy.

"You said it," replied Lili. "This wind goes right through me."

"Your mistake," said the ghost. "It goes right through me. You're no ghost."

"What is this, a debate?" snapped Lili. "I said I'm cold, and I mean it. How about turning around and whisking me back home so I can get my fur coat."

"I'll have a fur coat for you in no time," said the ghost. "Just wait right here."

"Giblets!" exclaimed Lili. "Don't leave me here! I'll drop."

But the ghost had vanished into thin air. Screaming with terror, Lili began to drop toward the gleaming city a mile below her. Before she had dropped a hundred feet there was a rush of dank air and the ghost was back, clasping Lili in one arm and with a mink coat draped over the other.

"I told you I could get anywhere and back in practically no time," said the ghost, grinning at her. "Here, put this coat on."

"Cripes, but you scared me," said Lili as she struggled into the coat, no small feat for one a mile in the air and going seventy miles an hour. She began to examine the coat.

"This isn't my coat!" she exclaimed. "It's a new one. It still has the price tags on it."

"I know," smirked the ghost, winking at Lili. "I didn't bother going all the way back to your apartment. I just dropped into one of the stores down below and picked up the nearest thing that came to hand."

Lili meanwhile had looked the coat over pretty thoroughly, and discovered that it was much better than hers, which was no mean mink itself. "You have pretty swell taste, kid," said Lili. "I could learn to be very fond of you." And she put her arms, those lily-white arms that had brought many a movie-goer's heart right up into his mouth, around the ghost's neck. But her arms went right through him. She'd have remembered they would if her dome hadn't been gold plated. Lili found she was only hugging herself, which was no particular fun.

"Anyway, I like you," grumbled Lili, chagrined, "even if I can't do anything about it. What's your name, by the way?"

"There you have me," answered the ghost. "You see Bill made me up in such a hurry he used whatever ghost material he had handy, and I really don't know myself yet. I was sort of thrown together like a pot pie."

"Then I'll just call you Potty," said Lili, with her customary ingenuity. "That's a chummy sort of name."

"Is it?" said the ghost. "I wouldn't know."

They were by now miles from the bustle of the city; and passing up an inviting looking ledge high up on a precipice, the ghost set Lili down to rest, fearing she would become cramped from the awkward position in which she was being carried. Awkward to explain to her mother, anyway.

"This is red sandstone," I believe," said the ghost just to start the conversation, as he prodded at the face of the cliff with an old eyebrow pencil he found lying on the ledge. But the conversation got no farther than that, for just then they heard a rush of air, and turning quickly in time to see two great flapping buzzard wings silhouetted against the huge silvery moon. The buzzard was there too.

"Looks as if we were in for it," said the ghost. "Go away," screamed Lili, as the buzzard hovered within a few feet of them.

"Oh no!" said the big bird. "You can't fool a buzzard. Something's dead around here."

"It was just a couple of jokes I was telling," confessed Lili, trying to stave off disaster.

With an audible snort of disbelief, the buzzard backed off and prepared to attack.

"What'll we do," cried Lili.

"Calm yourself," said Potty. "I have an idea."

(What is Potty's idea, and will he be able to save Lili from the cruel talons (not an advt.) of the voracious, ferocious, rapacious, but not very perspicacious buzzard? In other words, will his idea prove efficacious? Hoping you are the same, I can hardly wait for next month.)

And these nifties got together on a studio schedule listing future productions:

YOU MAY BE NEXT
IF YOU COULD ONLY COOK

MOONLIGHT ON THE RIVER
PANIC ON THE AIR

MAID OF HONOR—UNASSIGNED

KNEECAP REVIEWS

(I have my thumb in my mouth)

"SYLVIA SCARLETT," starring the elusive Katharine Hepburn. First part of this opus is just one of those things for which you hope everyone is properly sorry. However, if you can sit through it, you'll come to the last part, which is just one of those things.

Cary Grant wears his robes best of all the cast, and although overacting a bit, is quite convincing and satisfactory as the Cockney who lives by his nimble wits and has the mind of a pig because he firmly believes it's a pig's world. Regret: I suspect the director of giving Cary long speeches merely to prove that Cary could handle a Cockney accent. Edmund Gwenn as the weak-minded father of Sylvia, is too brown around the edges. Dennie Moore as a servant with delusions of grandeur came through nobly, although she would have appeared to better advantage if properly foiled. The whole story got off on the wrong foot by acting like burlesque, with nothing to burlesque. Brian Aherne and Natalie Paley, who appeared on the scene after some of the inertia had been overcome, contributed interesting performances.

But to get to the meat of the situation. Hepburn, who was amazing in "Morning Glory" and gave a performance in "Alice Adams" that was as real as rain on a roof, turns out a Sylvia Scarlett that is surely the work of no cinema artisan. A great deal is due to the aimless wanderings of the plot; yet one moment Hepburn is scaling the heights of perfection, the next she is floundering in the mire of ineptitude. It is becoming apparent that K. H. is depending on a limited number of acting tricks, chief among them a breathless method of speech delivery that is beginning to pall. She nevertheless possesses the spark of genius, and it is to be hoped that the man who directs her next picture will forget she is the Terror of R.K.O. and will adapt her to the story instead of adapting the story to her.

"WHIPSAW," starring Myrna Loy and Spencer Tracy. No ballyhoo, just a program picture, yet I think it compares favorably (though comparisons are odious) with "The Thin Man." Plausible and fast-moving, it keeps you constantly outguessed; and you'll fall for the sympathetic renditions by

Myrna and Spencer of the lovely "square crook" and the quick-witted, human detective. Every time I see Tracy I am more and more convinced of what a splendid actor he is, and there isn't an atom of doubt about that smooth Loy. Stay away only if you positively detest all kinds of gangster stories. Maybe you'd better go even then—you might be converted.

Much credit must go to smooth-flowing direction by Sam Wood. Especial thanks to the production for showing us Robert Warwick once more. Warwick was notable in the small part he had. We should see this grand actor more often.

DIPPY DITTY

I like sce-na-ri-os.

Sce-nar-ri-os are full of plots.

Plots are full of dirt.

I love dirt;

It makes such nice mud pies for sling-ing.

I LIKE sce-na-ri-os!

By R. THRITIS.

HOLLYWOODCUTS, by the Shovel Boys (They dish the dirt). * * * Lila Lee and Patsy Ruth Miller have opened a gown shop on Sunset Blvd. A beautiful place it is too. * * * Walt Disney added another distinction to his long list when the French Consul, on behalf of the Republic of France, awarded Mickey Mouse's papa the cross of the Legion of Honor. * * * Young George Breakston received an award, too—this time an award from the Italian Government for his work in the Frank Borzage production, "No Greater Glory." Just as the Italian Consul was about to be photographed handing George an autographed picture of Mussolini, all the lights on the stage went out, and it was an hour before they came on again. No doubt about an Ethiopian in the woodpile this time. * * * Mary Pickford is now a producer, under the United Artists banner. She turned over the cameras on the first scene of the picture, herself, personally, by black magic. She simply waved her tiny hand in front of a beam of light, a "photo-electric eye" saw her do it, a switch automatically clicked on, and away went the cameras grinding out a close-up of Francis Lederer.

The second season at Santa Anita Park is well under way. The track has been beautified in a hundred ways and many additions have been made to the buildings. With these increased facilities and a lower "take," the resort is packing in the pony-watchers. * * * Douglas Fairbanks the Elder (you-all remember ol' Elder Fairbanks!) lost no time after his return to America in appearing at the Santa Anita playground. Doug is more tanned than ever and can still turn the old grin on and off like a faucet. * * * Madge Evans was elated over a bet split with Tom Gallery across the board on "Great Lover"—because he won, silly. * * * Eddie Adams started off not doing so well, but recouped on Azucar. * * * Bing Crosby didn't want to be photographed because his plaid sport coat was too loud. It might outshout you, Bing, but it can't outcroon you. * * * Walter Connolly was ducking newsreels on account of he's worked up a new superstition. At the Pacific Southwest Tennis Matches he was photographed with Kay Stammer. After that he didn't win another bet on the matches. So now he won't be photographed if he's doing any betting. The losses have been playing up to the spirit of things. Several long shots have come in. There have been two dead heats so far this season, whereas all last year brought out only one. In the San Felipe Handicap a riderless horse, Ima Count, came in first, although of course it was disqualified. * * * Al Jolson got off a merry-go-round of losing just in time to dash to the radio station and sing "The Music Goes 'Round and 'Round." * * * In the crush of ears leaving the track an irate motorist was honking impatiently at the cars in front of him. Herbert Mundin leaned out of a nearby car and yelled, "You must have lost, Mister!"

A SLIP OF THE PEN

An inquiring fan wrote to ask: "What is Mae West's middle name?"

And the answer that went back was: "Mae West's middle is not for publication."

HOW SAD DEPT.

Here lie the blonde ashes of Susan McPart; She told the screen idol that Love wasn't Art.

All right; all right; all right!

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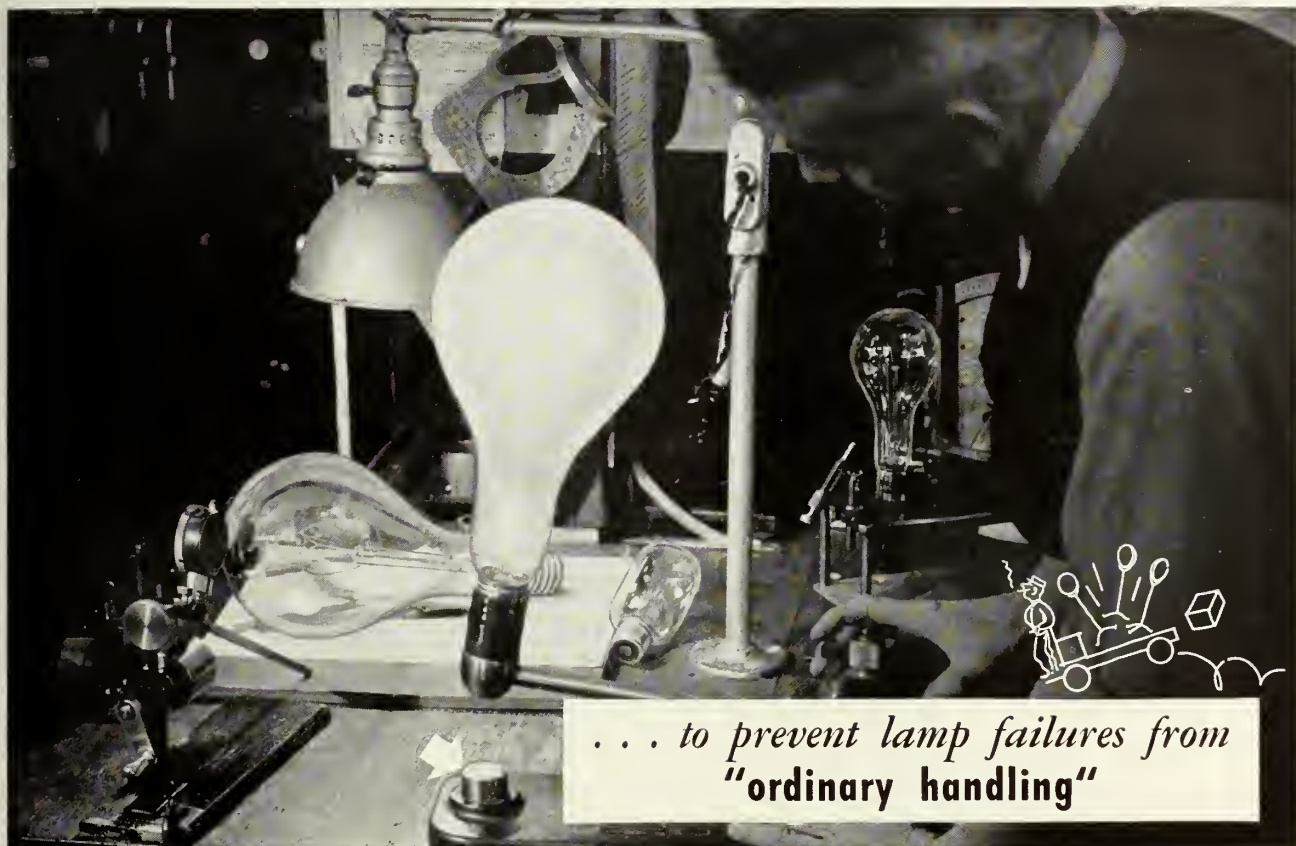
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To be sure that the insides of G-E MAZDA lamps will stand up, we test them for fragility. For lamps like the one pictured, this test takes the form of a jouncing ride on a hammer of steel.

The lamp is first inspected for any breakage or distortion of filament support. (In frosted bulbs, a special device enables the inspector to see inside.) Then the lamp is placed in the test machine shown above which drops the lamp onto a block of steel. This delivers a nasty jounce such as a lamp might receive when a truck carrying lights from one set

to another hits the bump at the bottom of a ramp. The lamp is lighted and inspected again, especially for breaks in the stem or exhaust tube... breaks which would permit air to enter and end the life of the lamp.

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GENERAL  ELECTRIC
MAZDA LAMPS

In Memorium



Fox Movietone announces the passing of James Seeback, for twenty years head of the photographic staff of Fox Movietone on the Pacific Coast, death occurring on January 19 after an illness of three years.

Deceased was a loyal member of Local 659 and popular with a host of friends. He was widely traveled, internationally known as a news reel operative and his passing will be lamented by everyone associated with the industry.

Mr. Seeback was 34 years old and left a wife and son of nine years at the home on Beechwood Drive, Hollywood. He was a native of New York City.

Local 659 and INTERNATIONAL PHOTOGRAPHER extend to the bereaved family assurance of their sincere condolences.

INTERNATIONAL PHOTOGRAPHER

HOLLYWOOD

TH YEAR

MARCH, 1936

VOL. 8
No. 2



"Modern Times," written, directed and produced by Charles Chaplin and released through United Artists. It took five years between "City Lights" and "Modern Times" and that's too long by anybody's chronometer, Charlie. We're expecting at least one a year, henceforth; otherwise it will be too late for some of us. Have a heart!

CENTS
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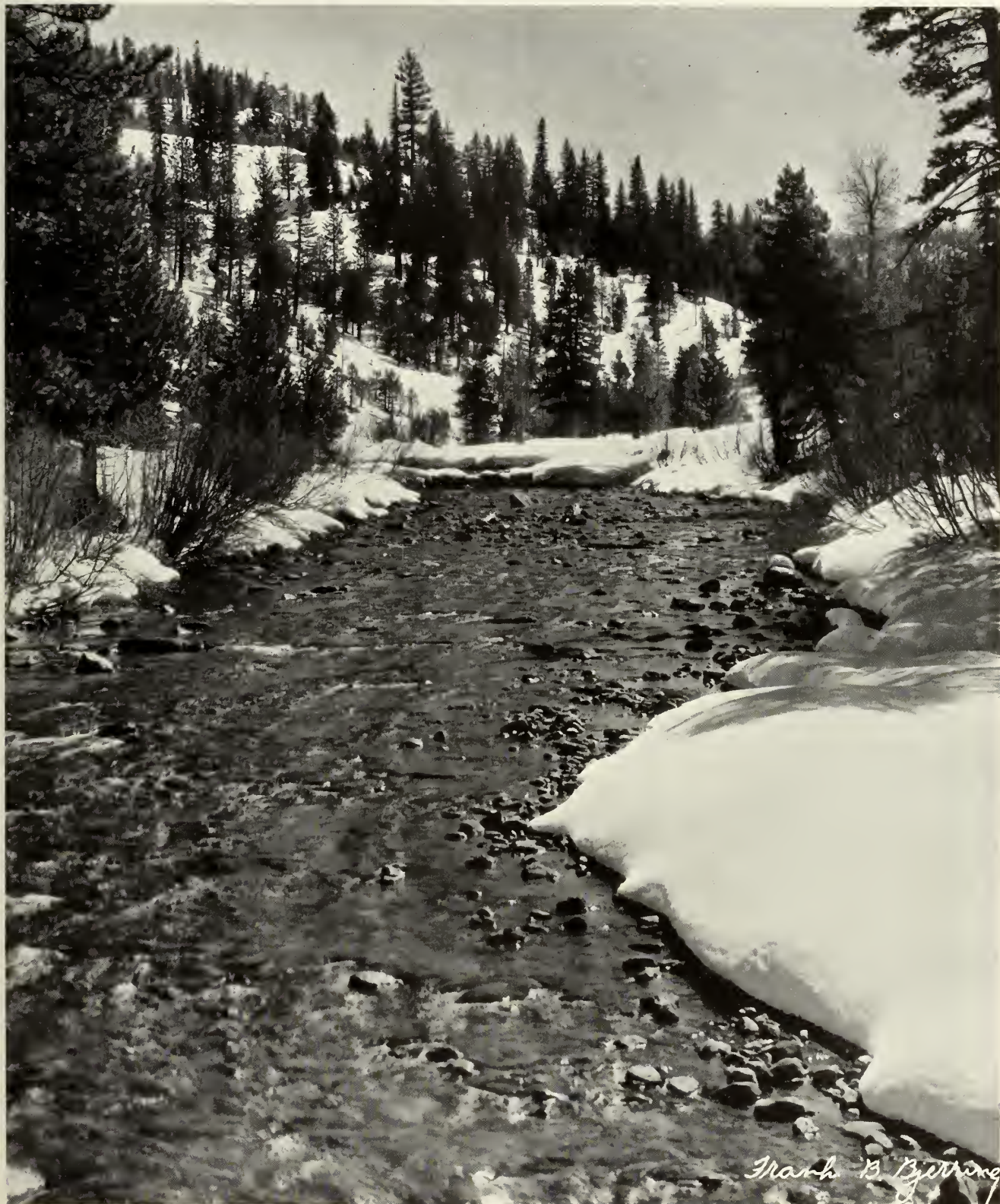
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The Spring Thaw in the Mountains



Frank B. Bjerring

BY FRANK B. BJERRING

Imagine having something like this in your backyard. Our photographer used to steal away up there for a rest between pictures and, while fishing, he took time out to get a few pictures like this in his "gude box."

INTERNATIONAL PHOTOGRAPHER

MOTION PICTURE ARTS AND CRAFTS

Vol. 8

HOLLYWOOD, MARCH, 1936

No. 2

SILAS EDGAR SNYDER, *Editor-in-Chief*

EARL THEISEN and CHARLES FELSTEAD, *Associate Editors*

LEWIS W. PHYSIOC, FRED WESTERBERG, *Technical Editors*

HELEN BOYCE, *Business Manager*

A Monthly Publication Dedicated to the Advancement of Cinematography in All Its Branches; Professional and Amateur; Photography; Laboratory and Processing. Film Editing, Sound Recording, Projection, Pictorialists.

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Our Writers for April, 1936



Robert Tobey continues his delightful patter on Cinemacaroni.



Earl Theisen will submit Part I of "The Evolution of the Motion Picture Story."



Captain Herford Tynes Cowling will supply an excellent story on "The National Archives"—new.



Lewis W. Physioc, Technical Editor, contributes something new and engaging on a subject not yet to be announced.



Paul R. Harmer will be back with "Intensity of Light Under Sea;" something for the sub-marine cameraman to think about.



Charles Felstead will continue his remarkable series of studies on Motion Picture Sound Recording. This series is a liberal education on the subject.



E. Hamilton Riddel is rapidly building up his Amateur Picture Section in our magazine. He is one of the cleverest writers on this subject in the country.



Robert Edmond Jones, internationally celebrated artist and specialist in scenic art, will honor our publication with an article on a subject of his own choosing.



And there will be others! All Stars!



Rollie Totheroh



A cameraman who helped the world's greatest cine artist to become famous.



THE SCENIC ARTIST

(The Cameraman's New Ally)

By LEWIS W. PHYSIOC

Technical Editor of International Photographer



HE technique of the modern motion picture is gradually confining production to the studio. The complications of the sound department have made location trips expensive, slow and inconvenient. Consequently every photographic trick and production process has been developed and perfected in order to enable the producers to avail themselves of the conveniences of the indoor studios.

Many exteriors heretofore done on location are now artificially reproduced, on elaborate scales, indoors. A visit to a modern studio will disclose beautiful gardens, bits of streets, huge ships lying at anchor, rolling landscapes and the like—remarkable combinations of actual, built stuff and painted backings and set pieces.

The new system has many advantages as well as disadvantages. While the natural effects of real exteriors are sacrificed, the art director is allowed a wide range in designing many artistic effects of lighting, composition and atmospheric character not always found, in nature, to fit the story.

It readily may be seen, then, the combination represents a perfect co-ordination of the efforts of art director, cameraman and scenic artist—the cameraman must arrange his lighting to furnish the effects designed by the art director, and the scenic artist must be able to paint in tones and tints that will also match the photographic tones of the real portions of the settings, to say nothing about accuracy of drawing and perspective.

It may be of interest to some of the younger students to know something about these scenic artists.

Away back in the year 1605 A. D., an ancient dramatist started something of importance. Instead of being satisfied with performing upon an empty stage where placards informed the audience, "This is a stone wall," "This is a doorway," etc., he played in front of a painted drop.

Then, in 1777, we are told the first stage setting was built and painted. Since those ancient times scene painting has flourished as a highly specialized form of art.

It enjoyed what was probably the pinnacle of its achievements about three decades ago, just prior to the coming of motion pictures, and was for some years forced to suffer a loss of prestige due to the ultra realism of picture settings and the more affected simplicity of stage productions. Gone were the days when theater patrons loved to sit in the parquet and enjoy studying those painted drop curtains, and then applaud the setting as that curtain was slowly raised. Some of us can remember many of those productions—those great spectacles of the London Hippodrome; the Germans with their Wagnerian operas; the French and Italians with their fine contributions, and the Americans with such productions as "The Bonnie Briarbrush," "Ben Hur," "Quo Vadis," "The Ninety and Nine" and the many grand and comic operas.

A feature of the scenic artist is his great versatility—he must be able to paint anything and paint

it well. To be sure, not all are able to execute a subject to the full satisfaction of the academicians, but many paint in a style that will challenge the most critical appraisal. While there is a tendency among some artists to depreciate the work of the scenic artist, there have been instances of such commanding merit as to receive the applause of all.

The craft boasts of those, among its members, who have been gold medalists in the most exclusive salons of the world—members of the Royal Academy, the National Academy and other institutions, foreign and American. One Leon Bakst, a Frenchman, was even a Nobel Prize winner. As regards the relations between the cameraman and the scenic artist, there is a peculiar significance in the fact that Daguerre, to whom the photographers owe so much, was a scenic artist.

Of course, as in all professions, there are specialists—some excell in decorative effects; others are more proficient in exteriors (landscapes); and some are fine figure painters; some specialize in architecture, interiors, perspective and such subjects.

A great critic once said: "The position of the scenic artist is particularly difficult, inasmuch as while artistic temperament and a thorough knowledge of art are essential for the practice of his vocation, it is equally essential that he should be thoroughly practical and, to a great extent, an engineer."

The medium of the scenic artist is known as "Distemper," a flat-drying water color set with gelatine size. It probably is one of the most difficult of all mediums of painting, but one of the most beautiful. One of the difficulties is due to the colors drying out several shades lighter than they appear while wet. The artist must keep in mind, with every brush stroke, what the ultimate tones must be. The medium is subject to a wide range of treatment, such as glazing with thin, transparent wash or bold, direct impasto, as with oils.

A great authority was asked what he thought of distemper. He answered: "A splendid material, distemper! For atmosphere, unequalled; for strength, as powerful as oil; and in half an hour you can do with it that which with wash or oil would take one or two days."

In painting for photographic effects, monotone is more practical than too free a use of color, regardless of the selective properties of the panchromatic film now used. However, simple black and white, while furnishing perfect photographic values, the tones are cold and unpleasant. It is more pleasing to the eye as well as more enjoyable to work, if a little umber and sienna are used to warm the tones, giving something of the effect of sepia, without destroying the photographic values.

Some scenic artists are so skilled in reading photographic values that they can enjoy the personal delight of using color and still preserve the monotone requirements for photographing. In painting in color it is well continually to study the work through a

(Turn to Page 22)



WRITING WITH A CAMERA

By KARL A. BARLEBEN, JR., F. R. P. S.

Dean of the Faculty New York Institute of Photography

WRITING with a camera—does that sound strange to you? Well, it needn't, for it is a legitimate practice these days. It is well known that practically all forms of magazine and newspaper writing, with the exception of fiction, stand a better chance of acceptance if accompanied by suitable and appropriate photographs, than without. Many writers are "getting wise" to the chances they lose daily by not being equipped with a suitable camera—and knowledge of its operation. The up-to-the-minute writer has long ago realized that a small investment in a camera means additional revenue for him in his work. Indeed, many feel the camera to be as indispensable as the typewriter.

The kind of camera to use for illustrating articles and other forms of writing is of no importance. From a practical standpoint, however, most writers seem to favor the small cameras such as those making negatives of $2\frac{1}{4} \times 3\frac{3}{4}$ inches and smaller. Greater freedom and economy are the reasons. It must be remembered that today the smaller camera is capable of producing just as good results as the larger models, sometimes better.

Of utmost importance is knowing the fundamentals of photography and correct method of operation of the camera. It is well known that the most expensive camera cannot turn out even passable results in the hands of an inexperienced operator. On the other hand, the least expensive and simplest box camera, when used by one well versed in photography, can be made to produce outstanding results. It is, then, mainly a question of application and skill in handling the camera, regardless of the cost. For some unaccountable reason, many people are unwilling to spend a little time delving into the science of photography. Yet they expect the camera to produce good results. After all, the camera is but a tool, just as is the typewriter. Of its own accord, it is incapable of making pictures; it needs to be guided and operated.

A person taking up tennis, swimming, golf, horseback riding or any other sport realizes that a certain amount of study and practice is essential before enjoyment or success can be achieved. So it is with photography, too, but all too few people realize this fact. After all, with each new camera comes a usually complete instruction manual which tells exactly how the camera is operated. With this new camera in front of him, unloaded, of course, the beginner should read the instruction manual carefully, and follow the directions on the camera closely. Then a few moments at manipulating the various camera parts and studying their mode of operation and their function will give complete confidence. Certainly no sport or activity can be so easily or quickly learned. Rule one, then, to neophytes, is to study the camera carefully from the very start. This one rule if heeded will prevent hundreds of disappointments and expenses later.

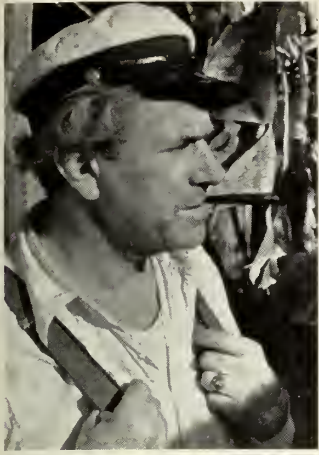
Rule two comes next, and calls for loading the film into the camera and exposing it. It is easy to snap pictures, but something else again if good results are to be expected. Shoot a roll of film and charge it to experience. In all probability the roll will turn out 100 per cent satisfactory if rule one has been followed. Even if a few mistakes manifest themselves—what of it? It is a sure bet that these same mistakes will be carefully avoided in the future. Therein lies the value of making mistakes on the first roll.

Along with camera manipulation comes the beginner's horror—faulty exposure. Poor exposures are responsible for at least 50 per cent of photographic failures. Yet how simple it is to completely remove the whole exposure problem by simply buying a reliable exposure meter! How much? Well, for two dollars you can get a tiny instrument known as the Leudi which is entirely satisfactory, or, if you wish, you can pay twenty-two dollars and a half and treat yourself to the finest and most accurate type of meter made—the electric photo cell type. The best are known as Photoscop and Weston Universal. Equipped with one of these instruments, you can banish all fear of faulty exposure.

Focus is another nuisance to most, yet it can easily be overcome by care. For example, it is desirable to become accustomed to judging distances. This will stand you in good stead in photography. Then, if the principal object to be photographed is thirty feet away from the camera, set the lens for this distance exactly, not twenty-five, and not thirty-five or forty—but thirty. The more expensive cameras of modern design are equipped with automatic range finders, built in, which remove all bother in this regard. Remember that exposure and sharp focus are the two main roads to successful photography, and they should be accorded the consideration of all who aspire to good photography.

Let us assume that complete mastery of the camera has been learned. The owner now knows exactly what's what on his camera, and can produce technically satisfactory results. There still remains





**FICTION WRITER—
CAMERAMAN—ACTOR,
ETC., ETC.**

Glenn R. Kershner, ace cameraman, lecturer, traveler, musician, recently returned to Hollywood after a prolonged tour of the South Seas, especially in the neighborhood of Papeete.

He went to check with the natives upon a book he had recently written with the South Seas and Papeete as a background and, while there M-G-M sent two companies to that locale, one to make backgrounds for "Mutiny on the Bounty" and the other,

headed by Richard Thorp, to make "The Last of the Pagans."

Kershner, always an actor at heart, was immediately grabbed by Thorp to play the part of Captain Larson, the only white man on the all native cast, while Sidney Wagner and Clyde De Vinna did the camera work.

Kershner made a perfect Captain Larson and also succeeded in getting a month's camera work, when De Vinna was called away to shoot some additional backgrounds for the "Mutiny" picture.

Kershner's son, 18, has been trained for the camera by his dad and is also an efficient assistant, while Norbert, 12, and Beverly, 9, go in for acting.

Talk about "doubling in brass" in the old minstrel days, Kershner can write the story, play the music, act a part, handle the camera, light the set, develop the film, cut the picture and do a dozen other odd jobs while illustrating the story.

The camera-author admits that he has several other books almost ready for the press. He is an ornament to the cinematographic group of the industry.

VICTOR DIRECTORY READY FOR YOU

Victor Animatograph Corporation, Davenport, Iowa, announces the Fifth Revised Edition of the Victor Directory of 16 mm. Film Sources, and it is a masterpiece of its class. No devotee of 16 mm. should lack the service afforded by this little book, and it isn't so little, either, for between its crimson covers are 100 pages chuck full of information that is absolutely necessary to the owners and operators of 16 mm. silent and sound films. Also it is as cheap as it is good. Get yours. You'll have to hurry!

THE MOVIES ON TRIAL

Compiled and edited by William J. Perlman and published by the Macmillan Company, this volume contains the views and opinions of outstanding personalities regarding screen entertainments. Among these are William Allen White, the Most Reverend John J. Cantwell, Edward G. Robinson, Raymond J. Cannon, Don Marquis, Seymour Stern, Upton Sinclair, Judge Ben B. Lindsey, and other notables. While there is much variance of opinion, there is also very decided agreement expressed on certain points. If interested in the judgment of those qualified to pronounce it, the book will be found very enlightening.

an important factor to be conquered—composition. Too much has been written about composition being difficult. As a matter of fact, the few simple rules of composition are ingrained in most of us, and we either are born with artistic instincts or we're not. Our instinct usually tells us whether a picture is good or bad from the standpoint of composition. If we lack the intuitive artistic sense, we can easily acquire enough understanding to make good pictures for our purpose. A simple little book entitled "Composition Simplified," by Hermon Gabriel, costing only 75 cents, will give the fundamentals at a glance, and is recommended to all who seek better and more pleasing photographs.

For those who write, photography is more than a means to an end. Its usefulness manifests itself at every turn. There is good reason for practically all famous authors and writers being photographic addicts. Fiction writers use their cameras for personal pleasure and also for the recording of scenes during

their travels. Taking notes may suffice in some cases, but supposing you are writing about a Mexican village—couldn't you write more forcefully if you could refer to actual photographs showing the natives, their costumes, the houses, the streets, etc.? Of course. The photograph tells more at a glance than ten thousand words—and what is more, is absolutely accurate! No wonder wise writers use the camera.

The vast majority of technical and trade journal writers use the camera for reproduction purposes, of course. In fact, to them the camera is more than an accessory to the typewriter—it is as important as the typewriter. With it they weave their industrial, scientific or political story with photographs. Around these pictures the text is usually written; not visa versa. Here is an ever-increasing field for ambitious writers who have the knack of finding the material that sells.

Writing with a camera, then, is not so strange as it at first appears. It is definite. It is the modern writer's medium of expression. BUT—without a basic knowledge of the camera and photography in general, little if any success will reward him. The public today is accustomed to the best and will not tolerate inferior illustrations. It demands the best, and regardless of how interesting the text is, it comes back with the usual rejection slip unless the photographs are skillfully produced.

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Motion Picture Sound Recording

Chapter XXIV

IN the preceding chapter of this series a number of additional constructional details and modifications of the three-stage "basic" amplifier described in the November, 1935, issue of *The International Photographer* were given. These details of design included such considerations as the input circuit of the amplifier and the associated input equipment, parallel plate feed in the stages of amplification, matching of the push-pull tubes, and a discussion of the most suitable output impedance for the amplifier.

Before describing the adaptation of this amplifier to operation from an a-c. power supply, and the design of grid and plate filtering circuits to prevent interaction between the stages of amplification, we will consider the meter that is used for measuring

ing in this plate circuit is approximately ten milliamperes. The meter will just handle a current of this value at full scale reading, but it is better to use a shunt across the jack to increase the meter range to 0-20 milliamperes. When in this jack, the apparent reading of the meter must be multiplied by two to give the real current reading.

The push-pull type 2A3 tubes in the final stage of the amplifier draw a total current of eighty milliamperes at a plate potential of 300 volts; so a shunt must be used across this meter jack. This shunt should be of such value that the meter range is increased to about 0-100 milliamperes; and the readings of the meter when the plug is in this jack should be multiplied by ten to determine the actual plate current drawn by these tubes.

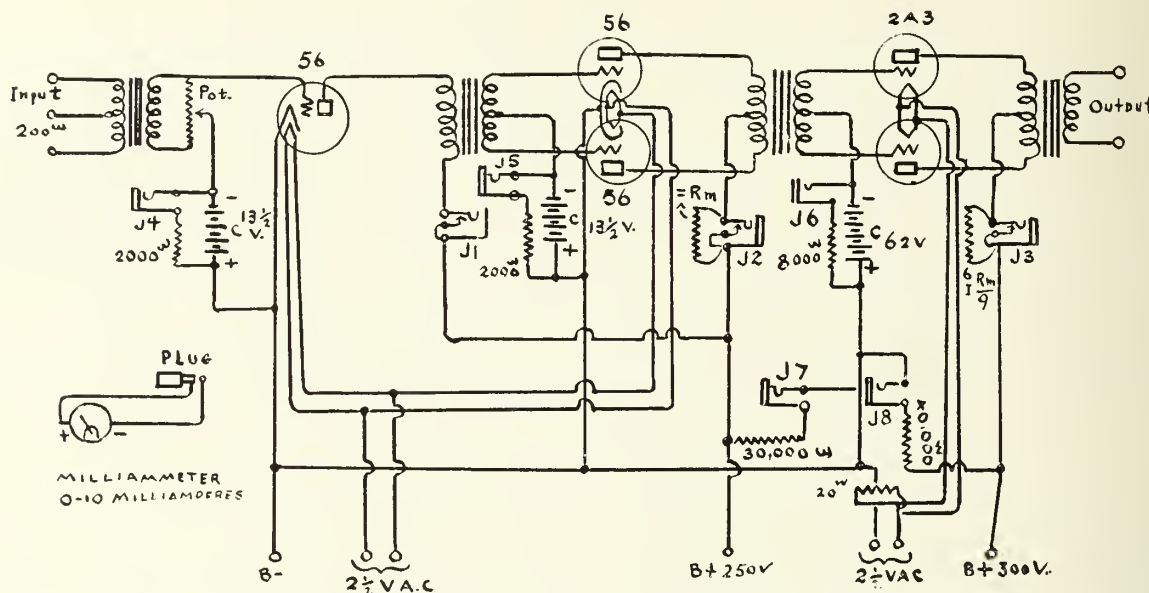


Fig. 1—Meter jack circuit for the D-6 model of the "basic" amplifier.

the plate current drawn by the tubes in the amplifier and for checking the grid and plate voltages applied to the tubes.

The Meter Arrangements

Due to the rather high cost of high-grade meters, circuit arrangements have been worked out that permit a single meter to be used for all the necessary measurements in the amplifier. Three-terminal jacks are connected in the circuit of the basic amplifier as shown in Figure 1. A milliammeter with a range of 0 to 10 milliamperes is connected by a flexible cord to a telephone plug that may be inserted in any of the jacks. The polarity of the jacks and of the plug must be exactly as shown.

Since the normal plate current of the type 56 tube in the first stage of amplification is approximately five milliamperes at a plate voltage of 250 volts, no shunt is required across this jack, and the meter reading is as marked on its scale when the plug is in this jack. As there are two type 56 tubes in the second stage of amplification, the total current flow-

The three jacks just discussed are marked respectively **J1**, **J2**, and **J3** in Figure 1.

Calculation of the Current Shunts

The formula for the calculation of the shunts for jacks **J2** and **J3** follows—the circuit arrangement is shown in Figure 2A—

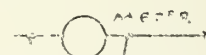


Fig. 2A—Increasing range of milliammeter.

$$R_s = \frac{R_m}{n-1}$$

where R is the required resistance of the —s shunt in ohms,

R_m is the internal resistance of the —m meter—also in ohms, and n is the scale multiplication factor.

In the case of **J2**, where we wished to double the

milliammeter range, **n**, the multiplication factor, is two. With jack **J3**, **n** is ten, since in that plate circuit we wished to increase the range of the meter ten times ($100/10 = 10$).

Assuming the 0-10 milliammeter has an internal resistance of ninety ohms (the resistance of any particular meter may be learned by writing to the manufacturer), and substituting the values just given in the above formula, we discover that the shunt across **J2** must have a resistance of ninety ohms, and that the shunt across **J3** must have a resistance of ten ohms.

The resistors used for the shunts must be sturdy wire-wound units securely soldered to the jacks. An open circuit in a shunt would cause the entire current to flow through the meter, and, particularly in the case of the shunt across **J3**, the excessive current would damage or burn out the meter. Any resistance rated over one watt carrying capacity will be satisfactory.

In the case of the shunt across **J2**, when the meter is plugged into that jack the current divides equally, half passing through the shunt resistance and half through the meter; so the meter reads only half the current that is flowing and the range of the meter thus is doubled. When plugged in **J3**, ninety percent of the current passes through the shunt resistance and only ten percent of the current flows through the meter, so the meter indicates only one-tenth of the current that is actually flowing.

The Voltage Jacks

By using two-terminal jacks and series resistances, or "multipliers," connected across the grid bias batteries and the plate voltage sources, as shown by jacks **J4**, **J5**, **J6**, **J7**, and **J8** in Figure 1, the grid and plate voltages may also be measured with the one meter. This arrangement is shown in Figure 2B. The formula for the calculation of these multi-

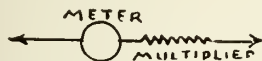


Fig. 2B—Circuit for using a milliammeter as a voltmeter.

plier resistances is—

$$R = \frac{1000 E}{I}$$

where **R** is the required resistance of the series multiplier,
E is the desired full-scale voltage reading of the meter, and
I is the normal full-scale current reading of the meter in milliamperes.

Since we are considering the use of a 0-10 milliammeter in this paper, **I** will be ten. Since for jacks **J4** and **J5** we wish to measure a 13½-volt C-bias battery, a maximum meter range of 0-20 volts will be desirable here. Substituting in the above formula, we learn that the resistances required with these jacks should have a value of 2000 ohms each. They need not have a rating higher than one watt.

Figuring a meter range of 0-80 volts for **J6**, an 8000-ohm resistor is found necessary for that jack. It should be rated at two watts or higher. Using a meter range of 0-300 volts for **J7** and 0-400 volts for **J8**, the resistance values found to be necessary are, respectively, 30,000 ohms and 40,000 ohms. These resistors should be rated to dissipate ten watts.

Carrying Capacity of the Resistors

For those readers who wish to be able to calculate the required wattage rating of the resistors, the formula is—

By
**CHARLES
 FELSTEAD,**
 Associate
 Editor



where **W** is the wattage rating the resistor
 $W = I^2 R$

must have to carry the current without heating,

I is the current in amperes flowing through the resistance (remember, 1000 milliamperes equal one ampere), and

R is the resistance of the resistor in ohms.

In the case of the resistor associated with jack **J8**, the wattage rating of the resistor determined by the above formula is four watts. But for a good margin of safety a resistor having at least twice this rating should be used. This same formula may be used for calculating the required wattage carrying capacity of the shunt resistors across the plate current jacks—**J1**, **J2**, and **J3**.

Other Uses of the Meter

If a double-button carbon microphone is used with this amplifier, the shunts across the meter jacks in series with each of the carbon buttons of the microphone should have a value such that the meter has a range of about 0-20 or 0-30 milliamperes when plugged into these jacks to read the button current. See Figure 3.

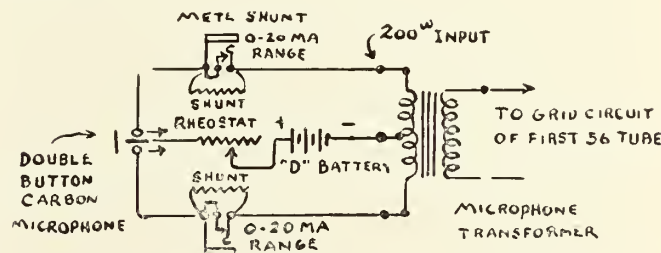


Fig. 3—Meter jack connection for a double-button carbon microphone.

When the filaments of the tubes are operated from direct current, a suitable resistor and two-terminal jack may be in series connected across the filament voltage supply to read the filament applied to the tubes. Since the meter used operates only on direct current, this arrangement may not be employed when alternating current is used for the filament supply.

With the d-c. filament circuit shown in Figure 4 and described in Chapter XXIII, a resistance should be employed that will provide the meter with a 0-6 volt range. With the 0-10 milliammeter, the re-

(Turn to Page 24)



Photographing In Color

By EARL THEISEN

[The dye imbibition process mentioned in this article is the one used by W. Wallace Clendenin and Steffin Hansen for the direct color work being done by them for "Dancing Pirates," the Pioneer Production, these two men having contracted to furnish all the color still work on that production.]

Honorary Curator Motion Picture and Theatrical Arts, Los Angeles Museum

NOTHING is nearer to the heart of all photographers than the wish to reproduce pictures in direct colors.

While heretofore the making of direct color photographs was largely confined to the advanced professional, due to recent advancements the amateur can, with a little patience and expense, make charming color-prints. While working in color is not as simple as black and white, it is entirely within the scope of the photographer who desires to do so.

First in making color prints, negatives must be made having the required "color-separation"; that is, negatives must be made which are a record of the colors of which the image is composed. As is known, white light is composed of equal amounts of the primary color lights, orange-red, green, and blue-violet; any coloration is a combination of these three in various proportions. The visible colors of all objects is a combination of the three primaries.

In making color-prints a record, or "color separation," of each of the three primaries is required to make the picture in color. This is done by photographing three separate negatives, one for each of the primary colors. To get the color-separation, a filter which permits only the one primary color to pass while absorbing the others is inserted in the optical path before each of the negatives.

The negatives so obtained is a photographic record of one of the primary colors. Now if transparent prints were made in color from the negatives and held up to the light in register, an image showing the colors of the original would be seen.

By the three negatives, which are usually made on panchromatic film through the Wratten tri-color filters "A No. 25" (red), "B No. 58" (green), and "47 C-5" (blue-violet), it is possible to reproduce practically all the shades and colorations of the spectral range visible to the eye.

While the three negatives make it possible to more accurately reproduce the original colors, for the purpose of the amateur, a two-color process is simpler to work and will attractively reproduce portraits and certain still life subjects with a fairly broad range of colors other than yellow. With the two-color method only two negatives are made which contain a record of the red-orange and green-blue objects.

A number of methods are available for making the negatives, of which the simpler is, perhaps, the bi-pack, which consists of two negatives held together, emulsion to emulsion, with a reddish dye layer (similar to Congo red), on the face of the front negative that acts as a filter transmitting only the orange-reds to the rear negative, which is panchro-

matic and red sensitive. The front negative is sensitive to the green-blue rays and blind to the red, the red passing through to the rear panchromatic negative. In this way the front negative makes a record of the green-blues, while the rear negative makes the record of the orange-reds. With the exception of removing the dye-filter interlayer after developing, preferably before drying, the negatives are developed as with normal black and white. Bi-packs may be obtained along with information from the Defender Photo Supply under the trade name "Dupac," although the advanced amateur may successfully make his own.

In photographing with bi-pack film a film pack adapter which may be altered is recommended. Because precautions must be taken to keep the two films in close contact, a thin glass should be placed in the adapter on the side next to the camera lens, while a thickness or two of sponge rubber is placed in the back of the adapter to press the two films against the glass and into contact. Allowance should be made in the focussing for the thickness of the glass by racking back the lens, although care must be taken that this is not overdone, otherwise much necessary sharpness will be lost. Ordinary plate holders may be also altered to accommodate bi-packs.

At times where the blues predominate, a compensating filter of the K2 or its equivalent may be found necessary for best separation.

A second method for making separation negatives is that of individually exposing for each of the primaries. Whereas action may be photographed with the bi-pack, the separate exposure method is confined to still life photography or portraits because of possible movement between exposures.

By this method for exposures with daylight use Wratten filter No. 28 for the red record and No. 40a for the green-blue, and with tungsten incandescent illumination Nos. 28 and 40 are used.

Make an exposure through each filter on panchromatic film with an increase in exposure according to the "factor" recommended by the film manufacturers for the filter. Develop and finish both negatives together so that uniform contrast and density is the result.

For the amateur who wishes to avoid the possibility of movement in portraits, but who does not have available a color camera which takes the separation negatives simultaneously, the sliding back will greatly speed up the exposing by eliminating the necessity of changing the plate or film holders between each exposure. Even with the sliding back some difficulty will be encountered getting the "sitter" to remain perfectly still, although it can be done.

The sliding back is loaded with films and placed on the back of the ordinary camera, the exposures thus being made more rapidly since the film and filters are changed simultaneously by sliding the next film into place. Many professional photographers use this method in obtaining color negatives.

A number of color cameras including the Butler, Jos-Pe, Steinheil, and others are designed to make the negatives with one exposure by optically splitting the light beam; these cameras are, however, very expensive.

After the negatives are made the task remains to make the reproduction. The simplest method for the amateur is color transparencies obtained by metallic tones. While the results are a far cry from natural colors, the pictures obtained have color separation and can make very charming portraits and reproduce certain still life subjects. To make this type of transparency make a direct transparency print from each of the two bi-pack negatives on lantern slide plates or on Eastman Positive Film, Defender Adlux, or other positive mediums, print emulsion to emulsion, and finish and dry like black and white with the exception the prints should be less contrasty and a shade weaker. After drying, the print from the rear negative of the bi-pack, which is the "blue-printer," is toned blue, while the front negative, which is the "orange-red printer," is toned reddish-brown in a uranium tone. The uranium tone gives a brownish-red that is not the desirable color; however, it is the nearest that can be obtained with other than dye tones.

A suitable uranium tone is as follows: 125 cm. water, 1 gram Uranian Acetate, 10 cm. Glacial Acetic Acid, 1 gram Potassium Ferricyanide, 1 gram Ammonium Chloride.

After toning wash until the highlights are clear.

Blue tone for transparency or paper prints: 0.2 gram Ferric Ammonium Alum, 0.2 gram Citric Acid, 5 drops concentrated Nitric Acid, 0.1 gram Potassium Ferricyanide, 100 cm. water.

Dissolve in order given. The solution should be a pale yellow color. If during toning it becomes colorless it is exhausted. Wash transparencies very thoroughly to remove the yellow discoloration.

While the metallic tones are the easiest to handle, dye mordant tones which give more brilliant transparencies may be worked; although working with dyes is costly and not at all advisable for the beginner because of many variables.

The "ferricyanide mordant" is often recommended and will give comparatively good dye images; however, the "iodide mordant" is by far the most certain for the amateur, although the resulting dye colors are not of the best.

An iodide formula is: In 5 cm. of water dissolve 3.6 gram of Potassium Iodide, and when dissolved add 1.5 gram of flake iodine. When this is completely dissolved to form a dark reddish brown solution add water to 125 cm. total volume. The film is bleached completely to a straw yellow color and washed thoroughly. The "blue-printer" (the print from the rear negative of the bi-pack) is then toned in the following Blue Dye Solution: 2.3 cm. 1% solution Victoria Blue, 125 cm. water.

For the print from the front negative, or "red-printer," the following red solution may be used

straight, or by mixing various proportions according to the requirements of the color subject.

Red Dye Solution: 6 gram Ponceau Red (basic), 125 cm. water.

Yellow Dye Solution: 7 gram Auramine O, 125 cm. water.

Orange Dye Solution: 5 gram Acridine Orange, 125 cm. water.

The film remains in the dye solution until completely saturated, and then after a short rinse cleared in the following: 45 cm. Glacial Acetic Acid, 50 cm. Denatured Alcohol, 125 cm. water.

After this a thorough washing and finally the silver iodide may be partly removed and the dyes fixed by long treatment in: 15 gram Hypo, 10 gram Sodium Acetate, 10 gram Tannin, 150 cm. water.

"Ferricyanide Mordant" for dye toning: Bleach both the positives completely in: 5 gram Potassium Ferricyanide, 1 gram Ammonium Bichromate, 14 cm. Glacial Acetic Acid, 125 cm. water.

They are then washed a few minutes in running water and cleaned until the yellow discoloring has disappeared in 5 gram Sodium Bisulphite, 100 cm. water. Then follow with a thorough washing.

Blue Dye Solution: 2 gram Methylene Blue, 2 cm. Glacial Acetic Acid, 200 cm. water.

Orange-Red Dye: 2 gram Chrysoidine, 2 cm. Glacial Acetic Acid, 200 cm. water.

These dye solutions may be mixed to produce intermediate tones. The films are immersed for about five minutes, after which they are washed until the highlights are clear. If the dye does not wash out readily add a little acetic acid to the wash-water.

If three color transparencies are desired, it is necessary to make the positive prints from three color separation negatives on film rather than plates. Use the Blue Dye already mentioned in conjunction with the following:

Red Dye Solution: 2 gram Rhodamine B, 2 cm. Glacial Acetic Acid, 200 cm. water.

Yellow Dye Solution for three color separation: 2 gram Thioflavine T, 2 cm. Glacial Acetic Acid, 200 cm. water. After the transparencies are dry, bind them together in register between glass with tape.

Interesting pictures which may be viewed directly like the black and white photographs may be obtained by making a blue metallic toned image on paper (best blue images are obtained on a gas light paper) from the "blue-printer" separation negative, and then from the "red-printer" make a red dye transparency as already described, using the formulae mentioned. When the two are bound together, some interesting effects in color are obtained. This method is similar to the Ives' Polychrome process, information on which may be obtained directly from Mr. F. E. Ives, 1753 North 15th Street, Philadelphia, Pa.

The advanced worker will prefer to work with a carbonyl or dye imbibition process because of the better results or because pictures on paper may be obtained. Both processes are difficult.

If the photographer wants to tackle a dye process, a knowledge of dye chemistry and much patience is required to learn the manipulation of the dyes. Months and often years are required before skill is gained.

There are, for example, many, many dyes having the same name but made by different manufacturers which are not the same chemical structure and consequently act entirely different under almost the identical manipulation. Acidity and hardness of water which differs in various localities is very important, temperature and slight impurities in the chemicals all affect the dyes which makes information of less value unless the worker has a knowledge of the chemistry involved. It remains for the patient worker to approach the matter not expecting the best results at first and find a set of dyes that "track" for his particular type of separation negatives and which can be more or less de-

(Turn to Page 26)

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THOSE engaged in photography, especially the cinematographic department, can hardly escape the thought that tremendous interests are dependent, to a great degree, upon mere guess-work or judgment in manipulating the various instruments and phases of the process.

The cameraman nervously adjusts the diaphragms of his lenses, being guided only by his experience and judgment. He is intimidated by many variables that influence the ultimate product—exterior light conditions, the problems attendant upon

end of a long run of development there is no mistaking the change.

The quality of negatives at the end of such a long run must necessarily be inferior to those developed in the ideal solution, regardless of attempts to maintain a balance between contrast and density by boosters, modifying the time, and the like.

All these difficulties are likewise encountered in the production of the positive and suggest the complications of the printing process; and it may be seen that so many variables must produce a series of

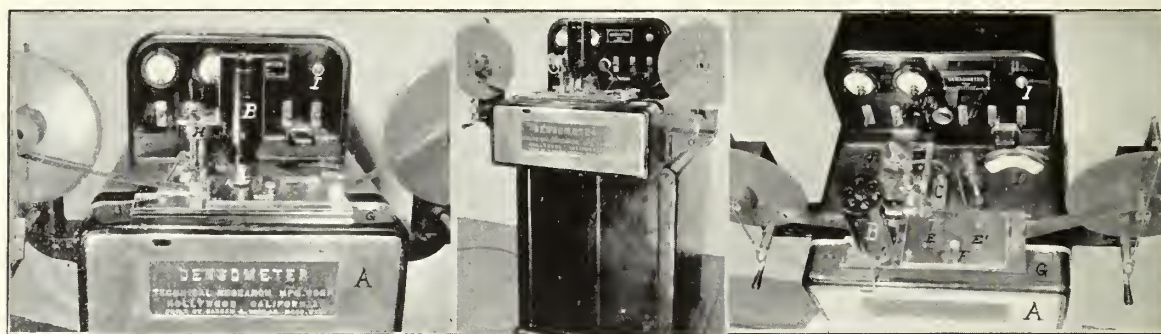


Fig. 1

Fig. 2

Fig. 3

arranging the artificial lights, etc. He knows that his exposures are to be developed by a machine that ruthlessly ignores any account of variations or errors in exposures. He is fearful of the tremendous expense that "retakes" entail.

This sense of uncertainty extends to the processing of the films. There is a degree of accuracy embodied in the developing machine and the time and temperature system of development; and the plotting of the gamma, from hour to hour, is a highly scientific means of showing the conditions of the solutions. But there still remains the problem of the control of those solutions—it is one thing to point out the depreciations but it is quite another thing trying to keep the characteristic constant. The gamma checks merely offer a good suggestion in applying the current expedient of dilution or adding the so-called "boosters." Such a method, however, can do no more than maintain a fairly satisfactory printing density after the developing solutions begin to break down. **Quality** depends upon the degree to which the character of those solutions can be preserved. This is a very difficult matter, due to the complicated chemical reaction that takes place during the developing process. From the time the first foot of film enters the developing bath this reaction begins to take place and increases with every foot of film—for every grain of silver reduced there is a proportionate decomposition in the solution. It is scarcely noticeable in the first few hundred feet, but at the

negatives as greatly varying in densities.

As the cameraman has had to rely on his judgment and experience in obtaining his exposures so must the laboratory expert arrive at his printing exposures. To be sure, he has been given a valuable aid in the so-called Cynex strips, but even after this graduated test is given him, the choice of the proper gradation depends upon the sharpness of his eyes, his taste for quality and judgment of densities.

Here, too, there are many variables. There is as wide a range of choice as there are differences in eyes of the many operators, their tastes, their degrees of judgment, etc.

Then, again, the test strips are the first to be developed, and while the prints that follow them match the selections fairly well, those at the end of a long run of development frequently vary both as to density and contrast.

It likewise requires considerable time to expose, develop, dry and read the tests, during which time the actual printing is delayed.

The selecting, too, is very trying. The operator must stand, for hours, gazing on to a brightly illuminated ground-glass over which the strips are laid; and it is reasonable to suppose that the pupillary contraction, as the result of the light shining into the eyes, must influence the selections during a long session. This is proved by the fact that no two operators can give the identical readings of the same set of tests, and further, no **one** operator can give

his same readings after a lapse of any great length of time.*

Such discrepancies have shown that the ultimate, visual correction by screening is necessary to insure satisfactory results.

Such a process must necessarily be expensive as evidenced in the difference between the price of processing the dailies and the release prints. In the case of the release prints, the waste in time and material is represented in the master print which is subjected to the same uncertain process as the dailies. After the master has been satisfactorily tested and corrected, the readings furnish a record, or matrix, from which any number of copies may be printed with very little loss. But with the dailies, only one print being made from each negative scene, errors are expensive, and the greater price is imposed to pay for such errors.

In exposing for the negative, the cameraman is guided by a slogan that has very nearly become a law—"Expose for the shadows and let the highlights take care of themselves." In exposing for the positive, the order must be reversed. In both instances, there is the suggestion that good photography is represented in finding the happy balance between these two extremes—highlights and shadows.

Mr. Lloyd A. Jones (Eastman Kodak Research Laboratories) has very beautifully expressed the printing problem by recommending exposing to a degree that will give a "just perceptible" tone in the highlights. He arbitrarily establishes this tone at a density of 0.008 in the highest light of the negative. This is quite satisfactory, but actual laboratory tests show that such a tone usually varies with the taste for quality among the different superintendents of the labs. This, too, is perfectly proper, and does not in the least affect Mr. Jones' finely expressed solution to the problem.

It would seem, then, that any device that would enable the printing expert to determine this exposure, not only the arbitrary density suggested by Jones, but any density desired by any individual operator, would be of value to the industry.

To this end, many experiments have been made. The selenium cell was the first of the photo-active agents to be tried, but without much success; nor has the thermopile proved much more satisfactory. The photo-electric cell has given more encouragement, but great difficulty has been encountered in trying to devise an electrical hook-up that will insure simplicity of construction and constancy in the light source, and a reliable action of the cell.

Those acquainted with the characteristics of the photo-electric cell, know that the straight line portion of its characteristic curve is rather limited. When controlled by most of the circuits, it suddenly and spasmodically kicks off at the shoulder—the

By DELMAR

A. WHITSON



point where quasi-ionization takes place—and responds sluggishly at the toe, crowding the calibrations representing the desired straight line portion.

Most of the experiments have considered the overall density of the negative, which is in violation of the Jones provision which we consider correct.

The machine about to be described represents a satisfactory compromise between actual practice and exacting theory, and is predicated on Jones' idea of finding and measuring the point of greatest density, and calibrating the reading to match the shutter of the printer that will furnish that "perceptible" tone, or any tone agreeable to the tests of laboratory superintendent or meticulous cameraman.

Figure 1 shows a general view of the machine—THE DENSOMETER. Figure 2 is a close-up of the upper portion, showing the principal features. Figure 3 is a more detailed view of the working parts. A (Figures 2 and 3) is the housing for the light sensitive cell, and its various electrical connections. B is the light source and its optical system. The cell and the light represent a single unit floating over an area equal to the motion picture frame, including the sound-track. The cell is a new type peculiarly fitted for this use. The light source is the ordinary lighting supply stepped down and controlled by a unique electrical system. The most violent line variations are compensated and the light is so constant that the slightest deviation of the indicator is not detected. A feature of the electrical system is that there are no tubes employed; no storage batteries; no generator. The only variable in the lighting system is the depreciation of the filament of the lamp. As this becomes apparent, the reduction of light is compensated by a control that keeps the intensity up to the standard. The life of the lamp is extended by being relieved of the full current except when making the reading of the negative, at which time a button is pressed, giving the full illumination. When the lamp becomes so impaired that it will not respond to the control, another is inserted in the socket. To this end, another lamp is always ready, and the connections are so designed that the setting of the filament is secured without undue and tedious adjustment. In Figure 2, the lamp house is shown in its proper position for reading; in Figure 3, it has been swung out of position to permit of opening the gate for threading the film. However, in threading, the film may be simply pushed through, and the gate opened only occasionally, just to make sure no dust has accumulated on the runways.

C, Figure 3, is a slide holding a ground-glass screen of constant transmission value. D is a meter calibrated in degrees corresponding to the light changes of the printing machines. E is the aperture where the negative is measured, showing the sound-track slit at the upper end. E' is the pilot aperture.

* Substantiated by the findings of Physioc and Whitson over years of experimentation; and Clifton Tuttle ("Assignment of Printing Exposure by Measurement of Negative Characteristics," Journal of The Society of Motion Picture Engineers).

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Simplifying Color Lighting

By WILLIAM SKALL

AS we simplify any photographic problem, we find ourselves able to think less about the mechanical routine of the task, and grow more conscious of the artistic and dramatic possibilities of our work. Lighting for natural-color cinematography should not be a problem; any color process must inevitably require more light than is usual in monochrome, but aside from this one requirement, the principal difference I see between the two is that in color you have far greater possibilities.

When assigned to photograph Pioneer Productions' "Dancing Pirate," I resolved to do everything possible to simplify the mechanics of the job, so that the possibilities offered by the Technicolor process and the story could be more fully realized. After reading the script which called for a great number of moonlight effects, it was felt that the mood called for softly pictorial low-key lightings. This in itself would build for simplicity; and by using light-colored sets, the problem would be made still more simple. So from the outset, it was planned to the use of light, neutral-toned settings, and in the extensive preliminary tests Color Designer Robert Edmond Jones and I made, progressively reduced the key of the lighting for these moonlight scenes until we were using what is, I believe as low a general level of illumination yet tried in natural-color camerawork. The results on the screen have so far been startlingly successful. The color generally is more natural—restful rather than aggressive; and as the lightings grew more simple, it has been easier to balance the various angles of light to avoid the colorless highlights and other unnatural effects which have sometimes detracted from color scenes. In addition, the combination of lower keyed lighting and the light-toned sets has proved a tremendous aid in the problems of lighting some of the very big stage-built exteriors used for the dance-numbers.

But it is in the field of effect-lightings, I think, that the combination of low-key lighting and light sets pays the biggest dividends. Nearly half of the scenes call for night-effect lightings, and thanks to the combination of light sets and an improved dye-balance evolved by the Technicolor laboratory, we have been able to reduce the light-level of the night-effects to an incredibly low average.

Now there is more than one way of photographing night-effects in color. Some of the cameramen favor the use of more or less exaggerated cross-lightings, with a rather general use of blue gelatine to suggest moonlight. Personally, I haven't been able to visualize night scenes made this way as being natural. Real moonlight gives a soft lighting, mostly

from overhead, with soft, luminous and highly pictorial shadows. And it isn't aggressively blue.

We have been able to duplicate this effect perfectly by simply taking advantage of the natural color-differences between the light-sources we have at hand. For our day lightings, we use Mole-Richardson twin-arc broadsides and overhead "scoops" for our general illumination; these units are inherently balanced to give a strongly white beam, closely comparable to sunlight. Our spotlighting is done with the same firm's new "H-I-Arcs" and "Ultra-H-I-Arcs," and some of the older 36" SunArcs. All of these are high-intensity arcs, and give a light which has just enough of a faint bluish tinge so that for day effects we use light straw-colored gelatin screens to whiten the beam.

Using these high-intensity units without the gelatins—"raw", so to speak—we get a light which, in low-key effects, precisely duplicates the steely blue-gray of natural moonlight. So for our night effects, we light the set with unfiltered "H-I-Arcs" and SunArcs, striving for the picturesque shadow-effects from foliage and balconies. The same units, of course, take care of modelling the players. As a fill-in light, to keep the shadows luminous, we use a few diffused "scoops" overhead, and a very few, well-diffused broadsides on the floor. Since the whiter light from these units is kept in a low key, and used simply to fill in the shadows partially, the difference in color is not noticeable, and is really an advantage. At times, our shot may call for an occasional trace of a more obviously bluish light here and there, to accentuate the moonlight illusion. This is done by simply slipping a blue gelatin onto one or two of the high-intensity units overhead, so that we get a few bluish catch-lights outlining the set or players.

Getting our moonlight effects this way simplifies the matter of getting the warmer tones of lamplight coming from within houses, or from street lamps. And again, we have a variety of effects available if we take advantage of the natural characteristics of mazda light-sources. Normal incandescent lamps will give a definitely warm yellow-orange light in Technicolor. The familiar reflector sunspots give the most strongly ruddy glow; the more efficient Mole-Richardson "Solarspots," while still warm-toned, give a far less ruddy effect. Playing these two familiar sources against each other and against the steely blue-gray of our arc-moonlight, we have almost every type of colored lighting needed for normal effects—and all without having recourse to the as yet barely explored (and therefore undependable) technique of using colored gelatins.

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Arc Lamp Designers Are Rewarded

By DONALD ASHBY

Patient work by arc lamp designers has removed the last obstacle which might prevent the general adoption of arc lighting equipment especially adapted to the rigid requirements of modern sound picture lighting. A glance at the final result of these labors reveals the fact that modern arc design has been greatly influenced by prevailing incandescent lamp construction, in fact, the characteristics of lightness, quietness and general performance are so identical that any incandescent may be removed from its position and a modern arc lamp substituted and no one on the set will be aware of the change other than the fact that it is now illuminated by a more intense light of beautiful photographic quality.

Engineering work of a high order extending over a period of years and prosecuted with great patience is summed up in the few words of the above paragraph, but the results upon the motion picture industry promise to be of far-reaching benefit. The introduction of this new light may mark the beginning of a great change in lighting conceptions and practice.

With the advent of sound, silent lighting was required. Because there were no silent arcs it became necessary to adopt incandescent lighting; then with the entire studio attention focused upon the production of sound only, incandescent lighting became the practice.

Photography became secondary, and the camera man was left to struggle with a lighting medium, the deficiencies of which have tied his hands even to the present. Robbed of his greens and blues, he has unceasingly struggled to secure the magnificent results of which his panchromatic film stock was capable had he been permitted the use of a light source which embraced the color range of sunlight.

So suddenly was sound adopted that arc manufacturers could not on the instant produce a mechanism silent enough for the new sound pictures. Also with the adoption of panchromatic film, a new quality of light for use on the sound stage was required which differed radically from the light of any arc available at that period.

With these obstacles to overcome we cannot wonder that the arc lamp manufacturers folded up and incandescent lighting, with all its drawbacks, adopted as an expediency, became entrenched as standard.

Panchromatic film, with its excellent reproduction of color rendition, with exterior sunlight exposure, suffered serious handicaps when it went inside the sound stage, lighted by a medium which had been robbed of its greens and blues. Therefore, we find cameramen in an odd situation of being required to use a lighting medium over-abundant in red, yet when he needed hard-light having arc to use the older forms of existing arc lighting equipment, which is known to be equipment so over-abundant in blues as to be equally disastrous to good photography.

It is not surprising then that the realization of this situation has inspired someone with the desire to supply the cameramen with a light whose quality should cover the range of their photographic color requirements and which should abolish those limitations existing in the only light equipment to which they had access.

Needless to say, the successful conclusion of this effort could only be accomplished by a due regard for the merits of existing lighting practice combined with an earnest attempt to introduce improvements in both the mechanism and light quality, which should be in perfect keeping with not only the lighting man's daily practice, but also the cameraman's present technique, and yet not neglecting the other factors of photography, such as scenic color schemes, make-up, etc.

The introduction of this new lighting medium and the benefits to the industry are immediate and profound. Released from the constant struggle to balance photography against a refractory medium of lighting, a cameraman finds a natural color scheme unfolding. By balancing the color at the source a natural balance of costume, make-up and color schemes results.

We may say that for the first time the excellent results of exterior lighting may be secured for panchromatic film indoors upon the sound stage. Better photography may now be secured at less trouble and expense to the photographic department. It is better that innovations do not come suddenly. The incandescent lamp has become so permanently entrenched in studio practice that it will continue for some time for general lighting, but by the introduction of this new quality light at a few strategic points photographic benefits may be secured without interruption to customary scenic, make-up or photographic practice.

Thereafter the technique of those responsible for color schemes of costumes, scene painting and make-up may be gradually shaped until the time when the realization of easier and better photography shall have been made possible by the more general use of arc lighting equipment.

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INTRODUCTION TO THE PHOTOGRAPHIC POSSIBILITIES OF POLARIZED LIGHT

F. Tuttle and J. W. McFarlane. J. Soc. Mot. Pic. Eng. 25: 69-78, July, 1935. The introduction of an efficient plane polarizing sheet material in sizes large enough to cover lenses and lights has made simple the use of polarized light in photography. An Eastman Pola-screen, incorporating this material, over the lens, allows unusual sky effects, photographing obliquely through glass and water without reflectors, and photographing other surfaces obliquely to show surface detail. When the subject is illuminated through larger Pola-screens, in addition, complete control of gloss results. Faces so photographed can appear unnaturally perspiry, or devoid of all luster, depending upon the camera Pola-screen position. Reflections from animation cells can be greatly reduced, and photographing any small subject that presents a reflection problem is quite simple. Various trick lightings and color effects are also attainable.—Kodak Research Laboratories.

BARLEBEN TO N. Y. I. OF P.

Karl A. Barleben, Jr., F. R. P. S., internationally known as a writer on photographic subjects, an authority on the miniature camera and an expert in all lines of photography, has resigned his position with E. Leitz, Inc., New York City, manufacturers of the Leica camera, to assume the position of dean of the New York Institute of Photography, 10 West 33rd Street, New York City.

The International Photographer congratulates both Mr. Barleben and the Institute upon the new connection. It is certain to prove of mutual benefit and this applies also to the patrons of the Institute.

Mr. Barleben has also but recently undertaken a broadcast over Station WHN, New York, a 30-minute program, "Behind the Lens," already a success.

CINECAMERAFORNIA

[William Kislingbury, cameraman, ex-soldier flyer, film editor, lab man, etc. and a loyal member of Local 659, I. A. T. S. E. and M. P. M. O., departed February 12, for Detroit, Michigan, where he has accepted a position with one of the biggest concerns in the field of industrial photography. Mr. Kislingbury will continue to write "Cinecamerafornia" for *International Photographer* and later will write some interesting articles on industrial photography in production.—Editor's Note.]

THE RECRUDESCENCE OF "OTTO"

Mr. and Mrs. Charles P. Boyle arrived in Hollywood on St. Valentine's Day from almost a year's



sojourn in Manila, P. I., where Mr. Boyle has been associated with Mr. Paul Perry, another Hollywood cameraman located in the Pearl of the Philippines.

The Boyles arrived on a Dutch steamer and they are settling down in Hollywood where both have formerly been at home and have a host of friends. They were married in Manila last fall.

Mr. Boyle, especially, is of international fame because of his comic feature published for several years in *International Photographer* under the title: "Out of Focus" and under the By Line, "Otto Phocus." Every cameraman on earth knows this feature and some day Mr. Boyle may consent once more to parade "Otto's" talents before his many admirers.

A CORRECTION

Kinema Krafts Kompany, through an oversight in their copy for the advertisement which appeared in our February issue, neglected to state that the 35 mm Eastman Super X they are offering at 2½¢ per foot is short ends. The correction has been made in their advertisement in this issue.

SCENARIOS READY TO FILM

Amateur Cinema League, Inc., publishers of Movie Makers, announces the publication of a new thirty-two page booklet issued by their Continuity Department of "Scenarios Ready to Film." In it there are four stories ready to film. These booklets constitute a service not available elsewhere for such a price. It is free on request of members of the Amateur Cinema League. This activity of James W. Moore is a most admirable and useful work.



The Flexible Screen—

By FRED WESTERBERG

Technical Editor International Photographer



No. 1. 1x2 Screen Proportion. Here is a shot from the facile camera of Sergeant Gorman A. Charles, Signal Corps of the United States Army. This picture illustrates a type of scene for which the wide screen is particularly appropriate.

Who can forget the tumult over wide screen pictures that arose in the late twenties, waxed feverishly for awhile and then suddenly died? Now, it is just barely possible that with confidence and optimism returning to the land, something may be done in the near future to revive this ailing giant, the wide screen.

Before such activity gets under way it may be well to take stock and observe just where we stand. Let us ask ourselves a few pertinent questions. What, for instance, do we hope to achieve by using the wide screen? What errors have been made that we can rectify? What methods are indicated for attaining wide screen pictures? Are any of these methods feasible?

The motives behind the development of the wide screen in the past can only be surmised, but the apparent reason was quite evidently to exploit the box office value of the big screen for its own sake. Whole productions were cast on the screen in this heroic mold, but the response was not as great as anticipated. The effect of mere size was like listening to a fusillade of brasses in a Wagner opera, very stirring for awhile but hardly to be endured for any length of time without soothing interludes of quiet harmony by the strings and wood-winds.

The logical conclusion to be drawn is simply this, that a motion picture production to be effectively presented in all its moods should not be all

wide screen. In fact it would be better if it were not all shown on the normal screen either. The ideal screen, in other words, would be flexible in order to make use of the most suitable screen proportion at any one point in the story.

The bulk of the scenes perhaps would be served best by the normal screen. The problem in most cases is one of height rather than width. In order to read facial expressions the heads must be as large as possible without cutting off vital action near the bottom of the picture. That is the reason why tables and desks are so often raised and put on blocks for the close shots.

On the other hand, as the distance from the subject is increased, the point is usually reached where the problem becomes one of obtaining as



No. 2 Screen Proportion 3 x 5. This still by Mr. Elmer Fryer allows larger heads of people in a group, clearer expression and greater effectiveness to the screen.



No. 3. 3x4 Screen Proportion (Present Standard). Carl Day is the still man who contributes this picture to the ensemble. The important requirement in this case is to include in the picture the girl's rounded knee as well as her face. A matter of height rather than width so we stay with the regular screen proportion.

Are We Coming to It?

much width as possible as far as the set is concerned without dwarfing the actors. A typical example of this kind of a scene is one in which two people at opposite ends of a table must be included in the picture at the same time. Such a scene to my mind would be greatly improved by the use of about a 3x5 screen proportion, which would permit the camera to be moved in closer than would otherwise be possible.

Then we come to the spectacular episodes that cry out for the wide 1x2 screen proportion. Imagine great displays of pageantry, battle scenes, revues, in fact any stirring action on a large scale presented in full orchestration on such a screen!

Can there be any doubt that the wide screen has a destiny to fulfill?

But now



ALEXANDER KAHLE
No. 4. 1x2 Screen Proportion. A wonderful photographic shot by Alexander Kahle. It tells its own story and the human figures but add to it a touch of life. Only the wide screen could do justice to a scene of such scope and magnitude as this one.



DAVID RAGAN
No. 5. 3x5 Screen Proportion. David Ragan is the artist who painted this with his brush of light. By using a medium wide screen proportion one is able to get the door into the picture without having to move the camera so far away from the action.

comes the rub. How are we going to accomplish this desired advancement in screen technology?

There are two principal avenues of approach to this problem. One is to work out a method utilizing the present standard 35mm. film, the other is by adopting a new and wider standard film.

One way to obtain wide screen pictures by using 35 mm. film would be to adopt a projection aperture .400x.825 of an inch

(Fig. 1) and use a projection lens having two-thirds the focal length of the normal projection lens. The normal height of the screen would thus be maintained and 50 per cent added to the width. The screen magnification would be increased by 50 per cent and the brightness of the picture reduced about 55 per cent.

Due to the changes required in projection, all sequences intended for wide screen use would have to be segregated in separate reels. In photographing these sequences it would be necessary to compose the pictures so that they could also be projected in the ordinary manner, since all theatres might not care to undertake wide screen presentations under these adverse conditions.

The answer to this method of obtaining wide screen pictures is obvious. A headache for all concerned.

Another method of utilizing 35 mm. film would be to abandon the present standard aperture and

(Turn to Page 28)



DONALD MACKENZIE

No. 6. 3x4 Screen Proportion (Present Standard). Donald MacKenzie caught this bit of action. The regular screen proportion is probably ideal for an intimate scene of this kind.

AMATEUR MOTION PICTURE SECTION

HAMILTON RIDDEL, EDITOR

Cine Shots Through the Compound Microscope

By PAUL R. NELSON

(Editor's Note: Although Mr. Nelson is primarily concerned with scientific aspects of the microscope, the account of his initial experiments in Microcinematography contains much that is interesting and helpful to amateur movie makers.)

DURING the dull winter months, when shooting out of doors is not desirable, Microcinematography is one form of photographic venture which is not only an education by itself, but is intensely fascinating as well to every lover of nature. The writer, in relating his experience with microscopic movies, does so in the hope of dispelling any fearful apprehension which may be entertained by amateur movie makers regarding the idea of making a film through the compound microscope. For the diversion afforded by microcinematography is unlimited and bears investigation by those movie makers who complain, "There's nothing left to film."

The illustrations, shown on this page, were taken from a motion picture negative, filmed under the most simple circumstances. The equipment was stripped of all refinements and apparent complications, leaving only essentials to work with. The microphoto apparatus was the last word in simplicity.

Cameramen who make a specialty of filming wild animals usually select for their set-up some spot near a water hole, termed a donga, from which to obtain pictures. The writer concluded that, in the making of his "animal" film, he had something in common with them. He too used a "water hole" to secure his subjects, in this case the family fish bowl. A drop of water from this source contained an abundance of specimens suitable for microcinematography. Incidentally, it should be remarked in passing that stagnant water taken from a puddle in a meadow will also reveal additional species not to be found in a fish aquarium. For an amoeba (a shapeless, irregular cell) can usually be found in these types of water. Tap water from city mains does not, as a rule, contain much material for a picture. Therefore, if one has not already adopted a fish bowl hobby in his home, he may place some aquarium plants in a dish of gravel and water, and leave them there for a few days, by which time some form of life should be available. This is called preparing a culture.

Attention must now be given to the arrangement of cine camera and compound microscope. There are different microscopes on the market, as there are different cameras, but all operate on the same general principle. The microscope objectives are the tiny lenses on the turret nose of the instrument, and the eye-piece is the ocular lens from which observation is made possible. For microcinematographic purposes, the ocular lens is usually put aside. And the camera lens is also removed from the camera, as the only lens used in making the film was one of the small objective lenses of the microscope.

In order to obtain a satisfactory image of a cul-

ture, capable of filling a motion picture screen, it will be appreciated that an exceptionally close set-up is necessary to couple microscope and camera together. Obviously, a light-proof connection tube between the two instruments is required and was supplied. This connecting tube was attached to the eye-piece lens mounting of the microscope; the other end being recessed in the vacant camera lens mount. By this coupling of the two instruments, the image-forming light is projected vertically from the microscope to the film in the camera's aperture. The cine camera and the microscope are thus so closely related that the microscope becomes, in effect, an extension or continuation of the camera itself. Moreover, the depth of the camera lens' recess permitted sufficient perpendicular action of the connecting tube to correctly focus the film.

A succeeding problem was one of proper illumination to light the field of action within the specimen slide. Several types of light sources were tried, but care must be taken to provide a "cool" light, or rapid evaporation of the specimen water will result. Readers may be surprised to learn that the greater part of the writer's microphoto film was photographed by the light of an ordinary 50-watt frosted bulb, placed directly beneath the specimen slide. The bulb being about two inches away from the under part of the slide, there was ample ventilation, and there was no apparent tendency to "cook" the specimen being filmed.

A very important factor in successful microcinematography is critical focus. Extreme care is necessary to insure absolute sharpness of image. Remember, the plane of action is very narrow; the actual depth of focus varying only about the thickness of a blotter. The slightest over- or under-adjustment will raise your flat field of focus above or below the desired plane of activity. Usually, microscopes have a dual control for focusing. One control brings the subject into focus instantly, but not critically. The other control obtains the final necessary delicate adjustment. In this connection it is advisable to place a thin piece of cover glass, commonly used by students of biology, on top of the drop of water which rests on the specimen slide; the cover glass being held in place on the carriage by means of spring clips. This cover glass will restrict the up and down movements of the specimen, and tends to keep them within the narrow depth of focus.

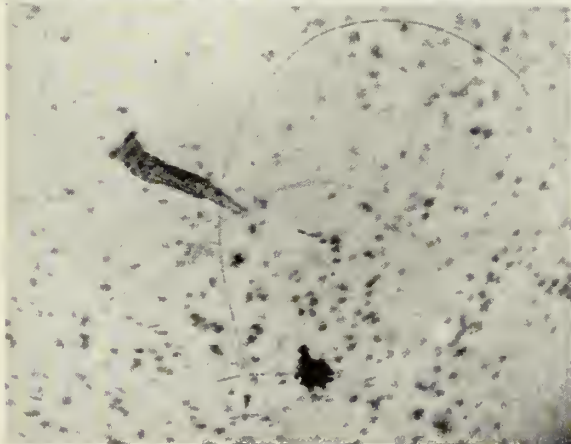
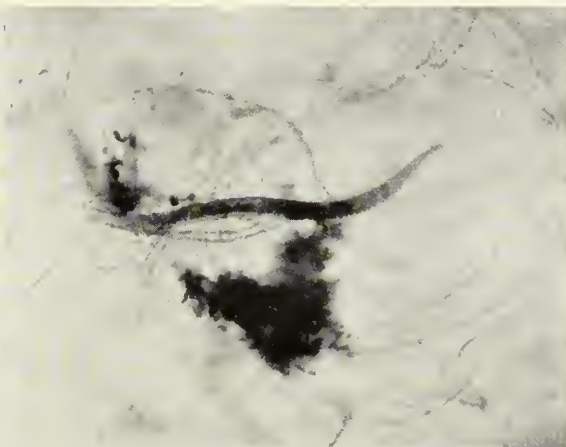
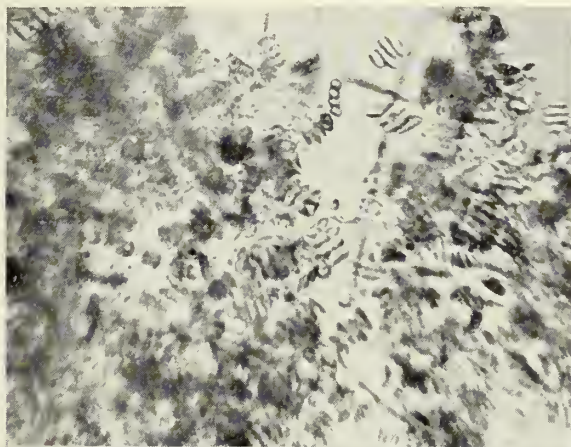
Amateur cinematographers may encounter some inconvenience in clearly seeing the culture while centering and focusing it on the film, depending of course upon the type of camera being used. If you possess a camera with a prism focusing aperture, there is no more difficulty than occasioned by professional 35 mm. cameras. Observation of all pro-

tozoan life in the culture is obtained by placing an eye on the focusing aperture of the camera as the dual focusing control of the microscope is manipulated.

Specific exposure data cannot be given, as such data will vary, depending upon the type of microscope lens, subject and film being used. Of the three microscope objectives on the turret of the writer's instrument, only two were used. Tests proved that with the first low power lens it was possible to shoot 16 frames per second and get ample exposure with the 50-watt bulb light source. The next higher power lens did not permit such exposure because of its slower quality. However, on "still" subjects, such as the cluster of egg-like material shown in the illustration, it was discovered that one frame per second gave correct exposure. Panchromatic film was used. Fine grain and normal speed film stock should be used in microcinematography. And exposure tests are the most satisfactory means to

ture of the camera enabled one to see, there on the film, exactly what had been seen many times before through the microscope alone. Along with the old familiar creatures came others of great diversity in size and shape. It was an immediate problem to pick out those that would give some idea of what could really be accomplished in making a picture. Some protozoan life will challenge the utmost patience of a photographer, due to circumstances which arise in the use of light, magnification and moderate heat. On the other hand, there are creatures easily victimized by the motion picture camera.

The first subject of the film was a long, worm-like creature; held "on location" by the assistance of a piece of cotton fiber. It demanded its divine right of freedom, whipping and squirming about like fury. But it made a good picture. The exciting part of making this shot was the chance taken on the questionable grip of the cotton fiber, trusting the creature would stay "put."



ascertain correct exposure data for your own particular microphoto set-up.

It will pay the movie maker well to spend a little time in using the microscope alone. Examine different sources of water (stagnant) through the instrument, and thus familiarize yourself with the creatures you are about to film. Simple conjecture will disclose the writer's thoughts, during this preliminary examination through the microscope, as he peered into the strange aquatic world. Every cell movement was translated into cinematic visions, projected on an imaginary screen. Such are the ones that drive the cinematographer to work. The film was about to become a reality! Accordingly, the equipment was put together, as explained, and operations begun.

The first specimen, or drop of water, placed under the cinemicrophoto apparatus yielded immediate results. Merely placing an eye at the focusing aper-

Another specimen was placed under the microscope, revealing the common Rotifer—so named because of the rotary action of the cilia, or hairs, circumscribing the gullet at the head of the creature. These fellows are symbols of industry, and are full of animation for the camera. However, their actions did not bespeak distress; they seemed quite indifferent to the mechanical giants over their heads. Their locomotion can be compared to the small green measuring worm, often seen on the leaves of green plants during summer. One end of the Rotifer is heaved ahead and the rest of the body follows. Critical examination made the discovery that the animal traveled in reverse; the double-pointed tail hooked to something ahead and pulled the rest of the body up to it. Next the Rotifers became like crude telescopes, as the animal stretched out to full length. The cilia at the gullet moved rapidly back

(Turn to Page 31)



RIGHT OFF THE REEL

By F. HAMILTON RIDDEL

Negative Storage: When a roll of 16 mm. negative has been processed, and by editing has been conformed to match a completed positive print, it should be safely filed away for future reference. It is not necessary, nor advisable, to spool negative film. Simply rewind it on a split-reel (see December, 1935, issue, page 26), remove and tape end of the coiled film. Wrap the negative in tissue paper and store it in a film can. The can should be securely sealed by adhesive tape and the subject of the negative inscribed thereon.

A Magician's Trick: Stop motion, or delayed action in photographing, is from the cinematographer's bag of tricks which on the screen will appear to emulate the intriguing feats of a magician. Simple to accomplish, stop motion can be obtained with any amateur movie camera, as no special attachment—or gadget—is necessary. For example, suppose we are photographing a friend in a medium shot as he makes several magical "passes" before the camera. At a predetermined time, after recording several such "passes," command the subject to "freeze"—that is, stop his entire motion and remain so posed, at the same time cutting off the camera. An assistant can then place in the subject's hands a hat, a watch or what have you. Then the camera is again started and action proceeds. This operation is repeated several times, with variations. On the screen, the results are very amusing—if they were originally timed correctly—as the entire scene becomes continuous action and your subject a regular magician. One word of caution: When taking stop motion, it is imperative that the camera rest on a tripod, or some other stationary support, to complete the satisfactory illusion of magic.

Adhesive Tape: One of the most often used accessories of home movie work is the w. k. but lowly adhesive tape. The half-inch variety will be found most useful. There seems no end to the uses for tape; to identify reels and cans, as a temporary editing splice, securing coiled film ends, and to tag scenes for editing and titling purposes. Keep a good supply of tape on hand. You're bound to use it often.

Screens: Don't ruin the results of good movie making by projecting your pictures on any wall or bedsheet that's handy. By so doing, the beauty of a good movie is at once lost, and the results very disappointing. A motion picture is purely a matter of reflection; the moving images projected on the screen are reflected back by it to your eyes. Thus it becomes evident that a good, clear reflecting surface is essential to maintain and to promote all the beauty and deliver a non-distorted image of your

pictures. Select a good screen with the same care and thought as you did your camera and projector.

Care of Filters: Careless handling of lens filters is a habit to overcome. Each individual filter should have its own case. Once cleaned, avoid getting the filter dirty or finger-marked in handling. Clean filters no more often than is necessary, and once cleaned, strive to keep them so. Excessive cleaning is hard on the filter glass, as in the case of camera lenses, and so is prolonged exposure to the hot rays of the sun. A good filter deserves good care.

Use for Tinted Stock: Besides its regular use, to impart a "color mood" to a scene, tinted film is quite useful as a "signal" to cut into the beginning and the end of a reel of movie film. About a foot of green tinted film at the beginning of a reel and a foot of red at the end will do. In selecting a reel for projection, and by noticing which color appears at the start of the film, it is at once apparent whether the subject is ready for screening. As in driving a car, green denotes "go." While if red appears, then "stop" and rewind.

Instruction Manuals: It seems no more than human that the average movie maker so often completely ignores the instruction manuals furnished with new movie outfits and accessories. That the same can be of inestimable value, both to a beginner or seasoned veteran, goes without saying. Yet it is common practice among movie makers to fumble around with new equipment, very often missing the fine points of a particular make of apparatus. Bear in mind that the instruction manual was written and compiled by the manufacturer, whose product you are about to use for the first time, and that for this reason the manual is authoritative. It is exceedingly well worth your time to study carefully your instruction manual and, through proper use, receive a full measure of satisfactory service from the equipment. Also, always keep in mind your cine dealer, who is glad indeed to render you advisory service. If there are any questions you have in mind after reading the equipment manual, don't hesitate to call on him.

Stock Titles: For the movie maker desiring professional appearance for his film titles at a minimum of expense, there are available many "stock" titles. A few examples of this kind of title are: The Family Album; Our City; Vacation Memories; Spring Time; Home Newsreel; End of Part One; The End, etc. Usually these "stock" titles have fitting backgrounds and are also available on tinted film if desired. While these titles are of a general nature, they will add immeasurably to your movies. Moreover, many movie makers, who for various reasons delay titling a film, find the "stock" title to be valuable, though temporary, until such time when they get around to incorporating personal titles in a film subject.

Travel Library Films: This being an age of speed, it is not always possible, in taking a motion picture camera along on a trip, to secure all the scenes of prominent places which we should really like to record. Often, too, a matter of insufficient light becomes a problem which, coupled with a rigid traveling schedule, precludes all movie making. In many cases, disappointment in completing a travel se-

quence may be avoided by buying library film of the subject missed. These library films are readily cut into your own personal travel record, and round out your entire subject nicely.

"Filmo Topics": Containing material that is of timely interest to amateur cinematographers, "Filmo Topics" is an attractive publication of the Bell & Howell Company. Special articles in the current issue of "Filmo Topics" include: "Shoot Them Indoors, Too"—containing some specific data on inte-

rior movies, both for 16 mm. and for 8 mm. Filmopan film; an interesting discussion of Kodachrome 16 mm. natural color filming; "The Evolution of a Movie Party"—describing an annual event in the home of a movie maker in planning and presenting a film party; together with photographs of new Bell & Howell amateur movie equipment. A copy of "Filmo Topics" will be sent, gratis, to any user of motion picture equipment by addressing the Bell & Howell Co., 1801 Larchmont Avenue, Chicago, Ill.

QUESTIONS and ANSWERS

By F. HAMILTON RIDDEL

1. How many Photoflood lamps, for making interior movies, can be safely used on one circuit?

Do not use more than five lamps on a single circuit, or you may encounter fuse trouble.

2. Are there any other precautions to observe in using Photoflood lamps?

When using Photoflood lamps in ordinary home fixtures, bridge lamps with parchment or cloth shades, etc., make certain the bulbs do not come in contact with the shades. It is even advisable to keep an eye on Photoflood lamps so placed, as they burn at high temperatures, and if left lighted for a considerable length of time, scorched shades will result. Except for artistic lighting effects, back-lighting, etc., it is far better to light your scene with Photofloods in metal photographic reflectors. The efficiency of the Photofloods is enhanced three-fold and there is no possible danger of damage to the regular room lamps.

3. Can still picture enlargements be made from single frames of a movie film?

Yes, whether you are using the reversal or the negative-positive film system. However, the method for securing stills differs with each system, the negative-positive offering the most direct. In the latter case, merely project the 16 mm. negative frame onto a sheet of enlargement paper, develop the latter, and your print is completed. Reversal frames require projection onto a piece of cut film negative, development, then subsequent printing from the processed cut film negative to obtain a still-print.

4. Is it necessary to use expensive fast negative film, reversal or negative-positive systems, in black and white cartoon work or direct title work?

No. Ordinary positive film stock will serve the purpose nicely. As a matter of fact, due to its contrasty characteristics, positive film used as a negative will prove superior for this type of work.

5. Can regular 16 mm. film be used in 8 mm. cameras? I note it is the same width as 8 mm. camera film.

No. Before processing 8 mm. is identical in size to regular 16 mm., as you state, but the number of perforation holes per frame is increased. There are three perforation holes, instead of two, on each side of 8 mm. film frames. Thus regular 16 mm. perforated film cannot be accommodated in 8 mm. cameras.

6. In a pinch can 8 mm. perforated positive film be used in making 16 mm. titles? I use both outfits, 8 mm. and 16 mm.

Yes, though for convenience sake it is not advisable; inasmuch as your titles may not frame themselves automatically in the projector. Moreover, extreme care would have to be exercised in splicing 8 mm. perforated film together with regular 16 mm., so that improper register of frame lines may be avoided.

7. Is increased speed of the super-fast camera film its only recommendation?

Absolutely not, although speed is the most generally talked about feature of fast films. Of equal importance, unfortunately not emphasized often enough, is color correction. That is, the ability of the fast films to render faithfully, in black and white tone gradations, the subject as the human eye sees it. Other types of film, the non-Panchromatic, are not sensitive to all the colors of the spectrum, though they are none the less valuable for use in certain types of motion picture work.

8. Do the darker modulations on a sound film track render the loudest sound volume in projection?

No, just the opposite is true. Light modulations on the sound track afford loud volume, while the dark ones produce reduced volume of sound.

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THE SCENIC ARTIST

(Continued from Page 3)

filter that more nearly represents the value of the light used by the cameraman. Exteriors, set out of doors, require varied treatment, according as they are photographed in the warm, direct sunlight or the cool light reflected from the north on to the sets in the shade. By viewing the subject through the filter, the artist can easily judge whether the delicate reds will be too much bleached out by the selective effect of the panchromatic film. The same test will help in determining the strength and purity of the blues and greens.

In order to balance these extreme effects, which are the result of the color sensitivity of the film to some of the primary tints, a neutral tint composed of umber and white may be dipped into, occasionally, and those positive tones may be modified so as to bring them into good photographic values without destroying the delight of responding to that sense of color inherent in all artists.

However, there is one advantage in the monotone medium that cannot be overlooked. Some of the studio jobs are extensive propositions, and must be done hurriedly, requiring many artists, working together. Consequently, if painted in color, the work most likely would show too great a variety of color schemes and as many different temperaments. It is not always possible to assign one man to an individual job.

The most successful method provides for a series of tones, mixed from specific formulae. These tones not only harmonize the efforts of all engaged on the job, but furnish a standard of reference, comparison and practice, in general; and enable the art director and chief scenic artist to direct the progress of the work in a very accurate manner.

As an illustration of the possibilities of the combination of the arts of the cameraman, art director and scenic artist, we may cite a recent picture called "The Music Went Round and Round," made by Columbia Studios and directed by Victor Schert-singer. One of the numbers involved a very interesting problem.

A peculiar transformation was required—a group of dancers performed before a set painted in colors of complementary values. Under the ordinary lighting, the background represented a composite design and the dancers were the usual types of pretty girls. At the proper cue a startling change was seen to take place. The girls turned to blondes, apparently wearing different costumes, and the background assumed an entirely different design. Then another change took place—the blondes changed to black-haired colored damsels with a characteristic change in the design of the background and costumes.

This effect was achieved by the cameraman, at the proper cue, by sliding a red filter across the lens, creating the blondes; another position of the filter, and there were the colored girls, created by the blue section of the filter.

To understand the effect of the filters on colors of the background, try the simple experiment of placing a red and blue stamp, side by side, upon a piece of white paper. Viewed through a red filter, the red stamp becomes invisible, and the blue stamp appears black; viewed through the blue filter, the blue stamp disappears and the red stamp becomes black. This would indicate that a mixture of the two colors, commonly called purple, would be visible through either filter, and the degree of visibility, through the

respective lenses, would depend upon the proportion of either color in the mixture, and the delicacy or intensity of the tones of the mixed tint.

In laying out the design, the tints of those portions that overlapped were mixed so as to form a composite picture under the ordinary lighting. In this case there was a mixture of the warm incandescent and the cold arcs to more nearly simulate natural light and aid the properties of the pan film. But the tints were calculated, also, to be obliterated or intensified when their respective filters were interposed. Thus, when the red filter was interposed, the reds were neutralized in proportion to their delicacy or intensity, rendering the design worked in the blues, and vice versa; with the same effect on the faces and costumes of the girls. The makeup of the girls was similarly selected.

It was a complicated problem, and Mr. Robert Wright, head of the scenic department, deserves great praise for the manner in which he directed the process. Each tint was carefully calculated as to the amount of each color it contained, and photographic tests were made to verify their actinic qualities. Each tint was carefully identified, and during the painting the background was continually studied through the filters and corrections made here and there where any errors in absorption or transmission occurred.

A specially designed filter was used—a 49 C. transmission on one end, a clear space in the middle and 29 F. on the other end.


Fifteen artists were continually at work on the picture.

To realize the growing importance of the work of the scenic artist, one needs but visit these departments in the various studios—especially the new outfit recently opened at the Warner Brothers-First National.

Mr. William McConnell, head of the department, gives us some interesting details.

The painting loft comprises a floorspace 40x112 feet; two frames 30x60 feet, two 30x50 feet. They are raised and lowered by Westinghouse automatic electric control—single switches move each frame, individually; another switch moves the two frames in unison, so that a great drop may be stretched over the two frames. The control is so accurate that there is not the slightest deviation in the movement of either frame, thereby avoiding a single wrinkle across the face of the drop.

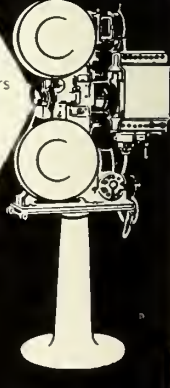
There is a special department for the painting of



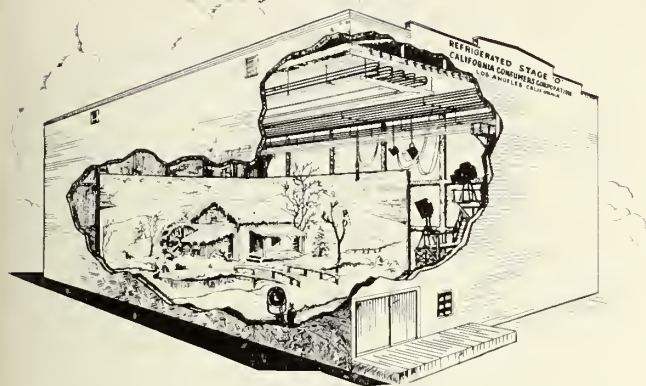
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WINTER MADE TO ORDER



After reviewing the snow sequences used in many pictures, the technical department of California Consumers Corp. conceived the idea of creating a large refrigerated stage where pictures of an icy or cold climatic condition could be realistically duplicated under the exact controlled temperatures of specific locales.

In furtherance of this idea the corporation converted one of the largest refrigerated buildings in the state into a modern refrigerated sound stage.

Where formerly prohibitive costs and lack of facilities made advisable the exclusion of snow or ice scenes an actual necessity, together with lack of realism except under the most favorable seasonal conditions, the corporation today is capable of creating on this refrigerated stage, at a fraction of usual cost, any snow or ice scene using real ice and snow.

Unusual features of this stage include a portable snow slinger which takes blocks of ice and pulverizes them into the consistency of fine snow, and blows the snow on the set where it is wanted in any amount needed.

This same machine is not confined to the stage, but may be used any place where electric power is available. It can literally make enough snow in one day to overflow nearly any stage in Hollywood.

Other features of this stage include the supplying

smaller pieces, such as panels, decorations, portraits, etc.

Mr. McConnell further cites a single picture, "The Petrified Forest," to illustrate the extent of the scenic artist's work. From twelve to fifteen artists were continually at work; 26,000 square feet of canvas was used, and over four barrels of paint.

In one sequence there was a purely scenic effect worthy of mention. A tremendous panoramic sky drop was painted as a transparency, to permit of the transition from day to evening. When lighted from the front with normal illumination, it appeared as it should, during the beauty and glory of the day. As the day waned, the front lights were dimmed and those at the back began to show through the transparency, simulating the evening glow along the horizon and bringing out the silhouettes of masses of trees, hills and such features of the night landscape.

The other major companies are rapidly building up their departments under the able supervision of such other artists as George Gibson, M-G-M; Charles B. Baker, Fox-Twentieth Century; Otto Kiekle, Universal.

It is needless to say, the scenic artists look with interest toward the development of color pictures.

of real icicles (hanging from roofs, trees, etc.,) that can be broken off and eaten. These can be furnished, as well as the snow, in a variety of colors if wanted.

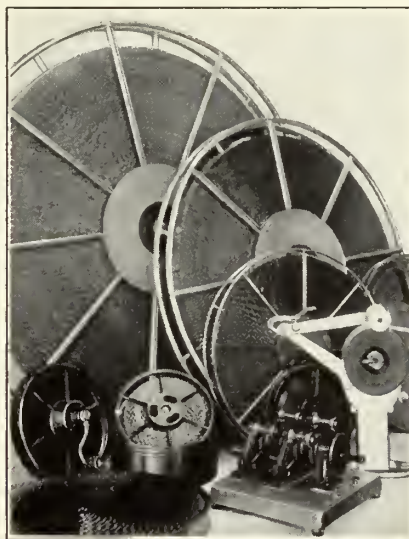
The formation of a skating rink using real ice is only a matter of a few hours and any of the snow or ice set can be maintained in their original condition indefinitely within the refrigerated stage.

Another item of possible interest is the carving of crystal ice into beautiful artistic designs that are of exceptional beauty when various forms of lighting are used, giving them the appearance of crystal carvings.

This stage now makes possible the shooting of actual snow or ice scenes, irrespective of the time of year or temperature. They create their own weather to correspond with that of any section of the country where all or a portion of the year has a cold or frozen climate.

It is most desirable in scenes of cold climate to have the breath of animals and people visible in the form of vapor while surrounded with banks of snow, in front of buildings covered with snow, or while occupied in skating, skiing, sleighing or walking through snow. This is easily possible under the controlled temperature, making it as simple a matter in a set on the hottest day of summer, as on the coldest day of winter.

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MOTION PICTURE SOUND RECORDING

(Continued from Page 7)

sistor used should have a resistance of 600 ohms; and its wattage rating would not need to be over one watt. When the filament rheostat is adjusted to the correct value, five volts will be applied to the portion of the circuit across which the meter is con-

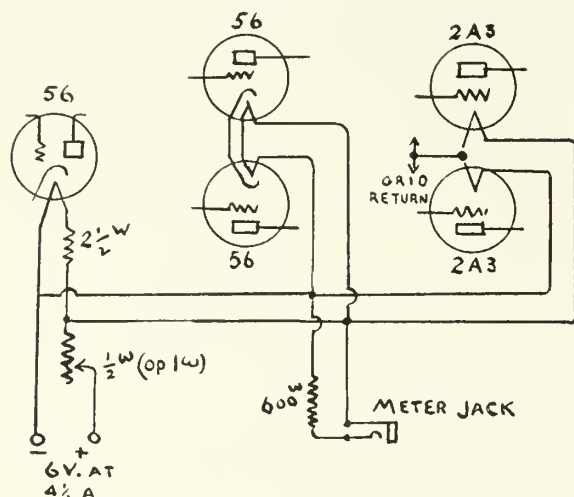


Fig. 4—Meter jack circuit for d.c. filament supply.

nected. This will cause the meter to give a reading of eight milliamperes, which corresponds to five volts (5/6th of ten milliamperes).

Extending the Range of a Voltmeter

To complete this series of formulas on meter conversion and range extension, it will be desirable to give the formula for the extension of the range of a voltmeter, even though such an operation is not necessary in the design of this amplifier. The external resistance required to extend the range of the voltmeter is connected as a multiplier in series with the meter as shown in Figure 2B. The formula to use for the calculation of the required resistor is given by—

$$R = R \frac{x}{m} (n-1)$$

where R is the required resistance of the multiplier in ohms,
 R is the internal resistance of the voltmeter in ohms (which may be learned by writing to the manufacturer of the meter), and

n is the scale multiplication factor.

If the range of a 0-100 volt voltmeter is to be extended to 0-1000 volts, n will have a value of 1000/100, or 10, and $(n-1)$ will be equal to 9. If a 5-volt voltmeter is to have a range of 100 volts, $(n-1)$ will have a range of 100 volts, $(n-1)$ will have a value of

19; and if the meter has an internal resistance of 2000 ohms, R_x , the multiplier resistance, should have a value of 38,000 ohms.

In all the cases that have been stated, it is vitally important that the resistors have exactly, or very nearly, the required resistance, as otherwise the readings of the meter would be incorrect. And likewise it is important that the resistors be of high enough quality so that they will not vary appreciably in value with time and with changes in atmospheric conditions. If any sort of accuracy is desired with this meter, it is advisable to buy the highest grade resistors obtainable.

An even better meter for this purpose than the 0-10 milliampere meter described here, but a more expensive one, is a 0-1 milliampere. Greater accuracy in reading voltages may be secured with this meter since it places less load on the voltage source under test. The internal resistance of most high-grade meters of this range is about 27 ohms. The formulas given previously apply equally well to this meter, remembering, when using the formula, to convert it to a voltmeter that the full-scale reading of this meter in amperes is 0.001 ampere.

Plate Meter Serves As Overload Indicator

When the milliammeter is connected in the plate circuit of any of the tubes (J1, J2, or J3), it serves not only as an indicator of the plate current taken by the tube but as a check for tube overloads. There should be no movement of the meter pointer from the position indicating normal plate current when the microphone is spoken into if the tube is functioning properly (as a true Class A amplifier); but if the tube is being overloaded by too great a grid voltage swing, the meter pointer will move erratically when speech current is fed to the tube.

In cases where the meter pointer varies during the operation of the amplifier, it is most likely to be due to incorrect voltages being applied to the tubes, particularly the bias voltage in the grid circuits. If the voltages are found to be up to normal value, the trouble usually can be corrected by reducing the speech current applied to the input of the amplifier. This may be accomplished by varying the volume control potentiometer in the grid circuit of the first amplifier tube.

It was impossible to complete the discussion of this basic amplifier and its related circuits in this chapter, but the next installment will describe an improved amplifier circuit designed to operate entirely from an alternating current source. Plate and grid filtering circuits will be discussed; and the design of a high-power amplifier to be coupled to the output of this basic amplifier will be described.

SIMPLIFYING COLOR LIGHTING

(Continued from Page 12)

The range of effects is really surprising. For example, one of our tests showed a waist-length figure of a man in a flat Mexican hat standing in the moonlight. Under the hat, his face was in a deep but luminous shadow, while a strong beam of moonlight lit up the lower side of half his face. Two diffused M-R Side arcs took care of the front-lighting, filling in the shadow just perceptibly; a single High Intensity arc spot on the lamprail overhead provided the key high-light. You could hardly have lit the scene more simply in black-and-white, though of course monochrome would permit smaller units.

It should naturally be understood that what we have been doing in this picture is by no means the idea of any one individual, but the result of combining the thought and experience of many experts in the fields of color-design, art direction, illuminating engineering, and color-printing. Our lighting technique has evolved in the natural progression of the many cameramen who have photographed Technicolor during the past sixteen years. Since the 3-color process has been in use, Technicolor's control system has kept scientific record of every technical de-

(Concluded on Page 31)

George E. Browne, President, I. A. T. S. E. and M. P. M. O.



George E. Browne, president of the I. A. T. S. E. and M. P. M. O., arrived in Hollywood recently for a sojourn of several weeks in California.

Mr. Browne is greatly in the public eye just at present, due to his startling coup which brought about peace among the warring elements in the I. A. T. S. E. and M. P. M. O., in certain theatres of the Middle West and

in the major studios of Hollywood.

Since Mr. Browne took things in hand the labor horizon has entirely cleared in Hollywood and he will depart from here having won the respect of of every man with whom he came in contact.

He merits in every way what was said of him after his election to the presidency of the I. A. T. S. E. of the United States and Canada:

"Too much cannot be said in praise of the new president. He is a thorough Union man and a master of the principles of Unionism. He particularly understands the problems of the great organization of which he has the honor to be the head and those who know him will say that he not only understands the problems, but that he has the courage, ability and wisdom to solve them.

"He is firm; he is absolutely trustworthy. He is loyal to the body over which he presides and demands loyalty in return. President Browne, though a man of vision and firm in his judgments, is nevertheless a diplomat and his reputation for fair dealing has done much to bring him the great popularity he enjoys.

"Moreover, the new executive is a man of action and ideas and he does not wait for anybody to take the initiative. In brief, he goes and he gets."

All of this and more was justified by his recent coup and THE INTERNATIONAL PHOTOGRAPHER is glad to add its plaudits to those of the thousands who have known and appreciated Mr. Browne all his life.

ROYALTY IN HOLLYWOOD

Peverel Marley, director of photography on Pickford-Lasky's "One Rainy Afternoon," says he is the last of the Peverels. That may not mean much to the average person; but it is sure to interest him who knows his Sir Walter Scott—particularly the story "Peveril of the Peak."

The opening sentence reads: "William, the Conqueror of England, was or supposed himself to be, the father of a certain William Peveril, who attended him to the battle of Hastings, and there distinguished himself."

If the novelist is correct that makes Cameraman Marley a descendant of "the Conqueror"—a blue-blood of the first rank. And quite a distinction for Pickford-Lasky to have a man of such antecedents on the producing staff of its initial production.

"I never paid much attention to the old family-tree," said Peverel Marley on the set at United Art-

ists, the other day, "until I saw a copy of Scott's historical novel, a while back. I bought it because of the similarity of the spelling of the name of the hero and my first name. It came to me through my mother.

"After reading the story, I made some inquiries and found that the family had credentials linking us up to the historic Peverils of England. The spelling of the name was changed years ago, the 'i' becoming 'e' in the last syllable."

Peverel Marley belongs to cinematography's royalty in Hollywood, being right up at the top, among the ace cameramen. He is fascinated by the pictorial possibilities of "Peveril of the Peak," and says he hopes some day to have a hand in bringing the story of his illustrious forebear to the screen. "For the last of the Peverils that wouldn't be such a bad gesture," Marley remarked. "Maybe I can talk Pickford-Lasky into it."



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PHOTOGRAPHING IN COLORS

(Continued from Page 9)

pendent on under the particular circumstances which the photographer works.

The procedure for the dye imbibition consists of "transferring" the primary color images in a manner that is not unlike the system employed in making color pictures by the printing process in which a cut is coated with ink and pressed in contact with paper. An imbibition matrix, which corresponds to the printer's cut in the printing process, must be first made from each of the separation negatives and then superimposed over each other on a final support which is subsequently dyed and "laid-on" a sheet of gelatine coated paper. This is done for each of the primary colors, if a three color process is used or green-blue and orange-red for two colors.

For making the matrix the best results are being obtained with the "wash-off" relief film made by the Eastman Kodak Company which is made specially for the purpose and may be obtained directly along with directions from their Service Department. The company also sells a set of three color dyes which give good color renderings, although some workers have found difficulty in getting the dyes to work.

The "acid" dyes obtained from Bachmeyer and Company, New York, such as Azo Rubine for the red and Patent Blue for the blue-green, have been found satisfactory. If difficulty is found working the Azo Rubine alone Metanil Yellow may be added. It is well to remember that the red dyes will bleed if the solution is not acid enough or not transfer at all if too acid.

If three color separation negatives are used Acid

Fuchsine for the magenta or red printer, Patent Blue for the cyan or green-blue, and Tartrazine for the yellow, may be tried.

The matrices are made as positives on the "wash-off" stock, dried, and then dyed. After dyeing they are washed back to the density desired or required for the contrast in the separation negatives, and then again dried before transferring. In transferring, the red, then the yellow, then the blue matrix is laid in register one after the other on a sheet of smooth surface gelatine coated stock that has been previously fixed. Five minutes should be required for each transfer. A solution of slightly acidulated water is flowed between matrix and final support, which facilitates the transfer.

The registration is accomplished by clipping the final support and the matrix together with a sheet of celluloid inserted between so the two do not contact until registration is complete. The matrix is lifted after the registration is complete, the celluloid removed and the transfer solution poured on, after which the matrix and support are squeezed together. Five minutes under five pounds pressure should be required for transfer. By lifting one corner of the matrix, the progress of the transfer may be observed.

For the photographer who wishes to work with the Trichrome Carbro and Autotype processes, the Belcolor, Dufaycolor, Dyebro, Duxochrome, Kodachrome home-movie, Pinatype, or other commercially available processes, information and printed circulars, may be obtained from George Murphy, Inc., 57 East Ninth Street, N. Y.

All of these processes have been worked successfully.

Color photography is fascinating, and it is a question of a short time before it will be more widely adopted; however, there is nothing simple about it and a photographer can not expect to get good color working the kitchen sink or just with a casual interest in the subject. It takes patience and study, and it is advisable for the beginner to start with a simple process and learn, thereby avoiding discouragement.

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(Turn to Page 29)

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EASTMAN *SUPER X*

PANCHROMATIC NEGATIVE

THE DENSOMETER UP TO DATE

(Continued from Page 11)

It may be noted that E contains an opaque mat punctured with a tiny hole. E' contains an amber screen similarly perforated, and illuminated from below. It is just five frames removed from the one to be measured—not so far as to permit any perceptible change in the position of the section to be chosen (visually) and that to be measured. F is a knob which controls the scanning of the entire frame by freely moving in any horizontal direction. G is a counter for checking each scene. This permits of catching any errors in assembling the rolls—the failure to record one scene on the time card will throw the entire roll out of printing order and necessitate a reprint. The counter also aids the accounting department. H is a swivel lock-joint to allow for shifting the light source when timing the soundtrack.

The upright panel at the back merely supports the various toggle switches and the meters for checking the voltage and amperage. Also may be seen the receptacle for the spare lamp, lying on the machine.

The Operation: In setting the machine to the standard, as suggested by Mr. Jones (or to the taste of the lab superintendent) a standard negative, known to print on a particular exposure, is inserted in the machine, one frame properly adjusted in the pilot aperture. The densest highlight portion may be in the center or near edge—anywhere. The little knob will permit of moving the tiny aperture in the opaque mat, seen at E, directly over this dense spot, and a check of the meter will show when the exact spot is covered. In scanning the frame it will be seen that the photo-cell and energizing lamp assembly move in unison with the visual aperture. When the densest spot is found, the needle indicator is shifted, by turning a control knob at I, until it rests on the number known to be correct for that particular negative. The next move is to remove the negative and shove in the ground-glass standard and take a reading of the needle with the tiny aperture in the center of the frame. Then, a record is made of the number upon which the needle rests. This number is now the standard for future operations. This standard may be shifted to suit any change in policy or quality agreeable to patron or superintendent, or to meet any slight variation in speed or quality of the different stock emulsions, or the various manufacturers. It likewise furnishes an accurate standard by which to check all departments of the processing. The lower part of the housing (Figure 1) contains the current balancing unit.

As the photo-electric cell camera exposure meter has removed the timing hazard for practically all of the leading cameramen, the photo-electric cell equipped "Densometer" may be considered an extension of this service to the laboratory man, to shorten his print timing operations, eliminate the many re-runs in the projection room for corrections, and effecting economy in his department.

THE ARCHAEOLOGY OF THE MOTION PICTURE

This most interesting and learned article by Earl Theisen will be concluded in the April issue of *International Photographer*. It is carried over from February in order to give place for Part I of Mr. Theisen's article, "Photographing in Color," which begins in this issue. "The Archaeology of the Motion Picture" was specially written for the Encyclopedia International Institute of Educational Cinematography, League of Nations.

THE FLEXIBLE SCREEN

(Continued from Page 17)

adopt about a .431x.868 of an inch wide screen camera aperture as a basis. The medium wide and normal picture proportions could be obtained by matting in the sides (Fig. 2).

The focal length of projection lenses would have to be reduced by one-third. The screen magnification would be 50 per cent greater than at the present time. No changes would be necessary, however, in order to show the various screen proportions, as the height of the frame would always be the same. The screen magnification would therefore be constant, as would the picture brightness.

This method seems to be quite feasible in all respects except that of photographic quality which would inevitably suffer due to the high screen magnification required. However, as a last desperate effort to retain 35 mm. film, it is at least worth a trial in spite of the agonized cries which are likely to arise from the cinematographers.

We come now to the question of actually widening the film. Here of course is the happy hunting ground for cinematographers and technicians who see a chance to achieve their hearts' desire as far as the technical quality of their output is concerned.

We realize now that 70 mm. and other gargantuan film sizes which were tried out in the boom days were unnecessarily large and costly to utilize and represented far too great a departure from the existing standard film to warrant the adoption of any one of them as a new standard film. For what we seek is after all a new standard film and not just a special film for wide screen pictures.

It seems to me, therefore, that a more conserva-

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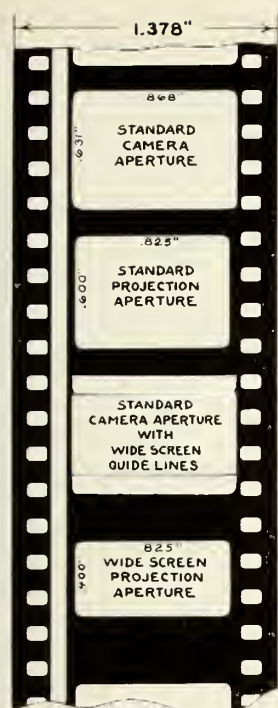


Fig. 1

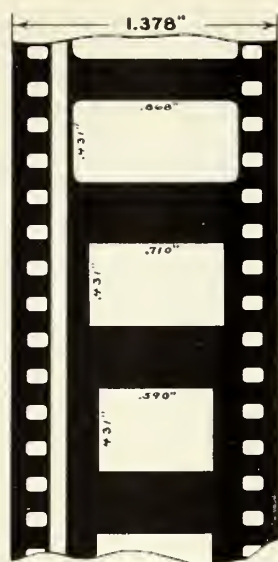


Fig. 2

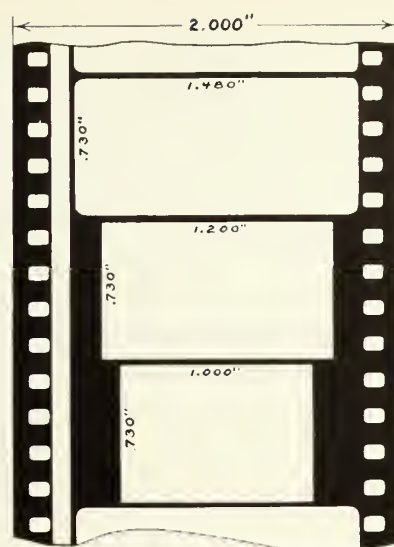


Fig. 3

tive approach is indicated. As a tentative proposal I would suggest a film about 2 inches wide, or just enough to attain a 1x2 picture proportion (plus allowance for projection angle) and still retain a height of four sprockets (Fig. 3).

The magnification required in projecting such a film would be about 15 per cent less than is needed to project existing pictures, which should be ample insurance that photographic quality would be maintained and even improved.

Since the height of both normal and wide screen frames would be the same, no changes would be required in order to project either one. The change from one proportion to another could be made at any time on the same reel of film. The same lens would project all scenes, therefore the magnification and the picture brightness would also remain constant.

We cannot, of course, ignore the difficulties involved in making a fundamental change in the film size. The fact that all cameras and projectors would have to be replaced or rebuilt to accommodate the increased width between the sprocket rows is one great hurdle that is barring the way. Such a change, world wide in scope, could not be accomplished suddenly. There would have to be a transition period during which both the old and the new film would be used. Projectors would have to be built that could project either film. This requirement should not be hard to meet, however, if the new film retains the essential features of the old, i. e., the same sprockets, the same sound track and the same speed through the projector. Another requirement of the transition period would be to furnish 35 mm. prints to theatres not yet equipped to show the new film.

Yes, the problem is difficult, but will it not have to be faced eventually? The inherent possibilities of the wide screen are too great and the eventual need of an efficient broad gauge film is so inexorable that neither can be dismissed with a shrug. The prospect is not too remote that some particular group will take the initiative as usual if Hollywood fails to exercise the cooperative leadership which is expected of it in a case of this kind.

PHOTOGRAPHING IN COLORS

(Continued from Page 26)

"A New Principle in Colour Reproduction," by M. Robach, British Journal of Photography, October 7, 1932, No. 312, Vol. XXVI, in which may be found much valuable information about dye mordanting.

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2,026,376—Apparatus for Copying Goffered Film. S. B. Colgate, assignor to Keller-Dorian Colorfilm Corp., N. Y.

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2,027,007—Feelable Footage Indicator for Motion Picture Apparatus. Otto Wittel, assignor to Eastman Kodak Co.

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2,027,191—Combination Projector and Sound Reproducer. W. J. Morrissey, Brooklyn, N. Y.

2,027,207—Sound Picture Apparatus. E. H. Smythe, assignor to Bell Telephone Laboratory, New York.

2,027,369—Photographic Apparatus. Fernand A. Bourges, New York City.

2,027,411—Lens Mount. Lloyd E. Whittaker, assignor to Technicolor.

2,027,520—Shutter Mechanism for Motion Picture Projectors. Israel Biebel, Minneapolis, Minn.

SIMPLIFYING COLOR LIGHTING

(Continued from Page 24)

tail which gave us invaluable information with which to work. Pioneer's Color Designer, Robert Edmond Jones, and Technicolor's Color Control staff, were responsible not only for the light sets, but for determining exactly the right shade to give the effects we needed.

Still another fortunate link in obtaining the present results was the construction of the new Mole-Richardson Type 90 and Type 170 High-Intensity H-I-Arc spots. These new units have helped the color cameraman tremendously in obtaining more pleas-

ing and more effective lighting. They allow a precision in lighting which could not be obtained with earlier equipment.

Add to this a company which, like Pioneer, permits time to get satisfactory light-effects, together with an Art Director who contributes good costuming and set coloring, and a constantly improved color process, and the result is bound to show on the screen as an improvement—but it is a combination of efforts on the part of many people and departments.

CINE SHOTS THROUGH THE COMPOUND MICROSCOPE

(Continued from Page 19)

and forth, while the whole animal swung its body from side to side, pivoted at the tail, in a perfect arc. This gyration is a method of foraging for the creature, as their action sets up currents in the surrounding water and attracts food particles. When foraging ceases to be good, operations are set up elsewhere. Readers who have not yet watched this protozoan "actor" have a real treat in store.

One's attention was next held by the perambulating Paramoecium. These fellows are straight and swift in their travel, and their stream-lined bodies make them appear as up-to-date as tomorrow's motor car. If any obstruction hinders their path, they will rotate on their body axis and make a bee-line elsewhere. These animals also have small cilia which aid them in swimming about the water. If one can show these minute details, such as the structure of the creature, your film will be all the more interesting.

While studying a certain specimen, it was the writer's good fortune to witness actual cases of cell division. Some cells are bi-sexual. On one occasion a peculiar bell-shaped creature became divided within the short period of forty minutes. This is a

rare sight, which fortunately was recorded by the camera. As this process of division takes time to effect, the movie maker should only expose a few frames at one time; use "stop motion," in other words. A quick full pressure on the camera operating button, instantly released, exposes but a single picture. Proper timing of individual exposures produces a film which, during projection, will re-create in two minutes such action as actually took an hour or more in reality.

No doubt to the processing laboratory the microfilm was no more than a succession of meaningless specks and spots. But in projection, the screen turned into a living pool of water with the creatures doing their stuff beyond fondest expectations. The result was well worth the trouble.

Microcinematography still remains a virgin field for the movie maker with an experimental turn of mind. There are numerous accessories for microscope and camera, if one contemplates a great deal of microcinematographic work, which further simplifies filming micro-movies. It is with best wishes for success that the writer heartily recommends the making of movies under the microscope.

CINEMACARONI

(With sauce for those who like it.)



By
**Robert
Tobey**

HOLLYWOOD HONEYMOON

(A novel novel of a thousand and one nights in a daze.)

By
R. THRITIS

Cast of characters and synopsis of preceding installments, for those who mumble and mutter: Perriwether Murgle, press-agent for that lovely, luscious Lili.

Lili Liverblossom, screen star superb, has been carried off across the desert to the lair of a great Bald Eagle named

Willy Nilly. Willy and his wife, Nelly Nilly, are holding Perri captive. Lili enlists the aid of

Bill, a ghost writer, who writes her up a ghost whom Lili dubs

Potty. After a little difficulty, Lili coaxes Potty to guide her in her search for Perri. They start off across the desert, and while resting on a rocky ledge, are set upon by a big buzzard, who ought to know better. Now jump on your push-bike and peddle.

CHAPTER XVII On the Rocks

"What'll we do now," cried Lili. "Calm yourself," said Potty. "I have an idea." "What do you hold it in with?" asked Lili, merely curious, and not meaning to be nasty.

Potty merely jumped and clicked his heels. He was watching the buzzard, who in turn was watching Lili, licking his ugly beak, and preparing to dash at his prey.

"Here's looking at you," said the buzzard nastily, as he started toward poor Lili cowering on the ledge.

Potty could scarcely be discerned as he stood beside Lili. He drew in a deep breath, and immediately began to glow with a weird phosphorescent light.

"Who-o-o-o-o!" came a horrible, deathly moan from Potty, and a dank clammy chilliness filled the air. The buzzard stopped in his charge.

"Well, look who's here!" cried the buzzard, and with a terrible screech he drove straight at the ghost, behind whom the rocky ledge was now scarcely visible. Just as he reached Potty, the phosphorescent glow died out as quickly as it had come. The buzzard flew straight for Potty's head, struck him—and went right on through! With a shriek and a crash he smacked into the solid rock behind Potty before he could even slow up, and he fell limp to the floor of the ledge.

The ghost winked at Lili, jumped and clicked his heels.

"Guess we took care of that smarty-pants," he said, as he picked Lili up and set out again across the desert, none the worse for wear.

Meanwhile Perri had been persuaded, after some coaxing, to take a walk, and had gone out the back way, smirking at each other as they went.

When they had left, Nelly Nilly looked up at Perri, a strange light in her eyes,—that is, in the one he could see, anyway. "Mr. Murgle," she cooed at him, "You're such a strong silent man. But you can't fool me—I know you Hollywood fellows. . . ."

She was interrupted by an insistent, steadily mounting shrill whistle, like that of a large bullet on a business trip. They barely had time to look up when around the corner whizzed Potty, the ghost, with Lili under his arm. He came to a whistling stop and set Lili down on the edge of the eagle's lair. Perri fell over with surprise (backwards, fortunately). Nelly wasn't surprised a bit. But she was mad enough to chew nails.

While Nelly was out looking for some nails, Lili stretched her slim white arms out to Perri. "Darling!" she cried. "Aren't you glad to see me?"

"Sure, kid," said Perri, walking into the outstretched arms, and not wasting his own either. But to himself he was saying, "Shucks, now I'll never know whether I was about to be propositioned by an eagle or whether Nelly just wanted to know if I could get her a job in pictures."

Then Perri for the first time took a good look at Potty, who was standing quietly by.

"Who's your somewhat transparent traveling companion?" he asked Lili. Just then Nelly came back in with the two children.

"This is Potty, everybody," said Lili, doing the right thing, more or less. "I was sure he could find the way here," she added to Perri, "and I knew I would always have a way to handle him. Wasn't I smart?" It took Perri a minute or two to trace out her line of reasoning. Then he flashed her a quick look and hastily said, "Sure, kid."

Just at that moment there was a yelp from Mrs. Nilly. "Here comes Willy," she cried, "and he's loaded with something." And all looked out to where Willy could be seen in the distance, staggering homeward through the sky.

(Well, where do we go from here, What will Willy Nilly have to say, if he can talk? Will Nelly Nilly cause trouble? And how will Lili and Perri get away? Send a stamped addressed envelope and I'll send you the answers, plus a lot more questions just as amazing. They'll all be published next month.)

Carole Lombard went through a bad month with her men-folk. George Raft walked out of Carole's current picture, "It Had to Happen," because he claimed Carole's pet lens squighter, Teddy Tetzlaff, gave Carole all the breaks in photographing her pictures. Fred MacMurray, who scored such a success previously as her team-mate in "Hands Across the Table," was put into the cast in place of Raft. Then MacMurray walked out, demanding a raise. But all is now quiet on the Potomac; MacMurray has his raise, and is back in the picture.

Anyway Carole should worry. She still has that schoolgirl complexion. And Bob Riskin.

From the current theatre marquee:
MURDER ON A HONEYMOON
MAN'S BEST FRIEND

HERE COMES THE BAND
and TWO SINNERS

ANYTHING GOES
with
BING CROSBY and ETHEL MERMAN

SHE COULDN'T TAKE IT
Surprise Night

Tsk, tsk!

KNEECAP REVIEWS

(Somebody stepped on my thumb)

"MODERN TIMES," a production of, by, to, from, and with Charles Spencer Chaplin. With its customary pathetic figure beset by antagonistic forces, this time a man harnessed and bewildered by the complexity and mechanization of these parlous times, Charlie's latest brain-child is nothing if not interesting. Film is an amazing compromise between pantomime and sound. Although a few sequences have recorded natural voices, production in general follows the old silent form. After so long an absence from this type of treatment, the effect is almost that of an entirely new technique. Picture could be much improved by judicious pruning. Opening sequence where Chaplin endlessly performs one single operation on a series of articles on a conveyor-belt, is repetitious to a point where laugh value is lost. Same applies to several other sequences. Funniest sequence in the picture: Chaplin made the goat in trying out a new automatic employee-feeding device—machine runs amuck and practically takes stitches in the audience. Maybe you'll prefer sequence in which poor Charlie picks up a red danger-flag and gets involved in a Communist uprising—to the tune of ten days in jail!

Chaplin credited with original composition of the excellent musical accompaniment as well as production, direction, and writing of the story. Is said to have composed the entire melody, bit by bit, on his violin. Two other fellows wrote the arrangement for orchestral accompaniment.

Pic is debut of Paulette Goddard, and she's going to do all right from now on. Appears amazingly young, but is not photographed to best advantage. Less flexibility to Chaplin's face than in previous films. Depends more on gestures. There was little brilliance to the print I saw, so it is hard to comment on photography by Rollie Totheroh and Ira Morgan.

Chaplin has been going with Goddard ever since he first discovered her. They've been rumored separated a dozen times lately. Few are even sure they were married. Certain it is that Paulette adores Charlie. In "Modern Times," Chaplin departs radically from his stock ending wherein a lone figure walks forlornly toward the setting sun. In the new picture, Charlie and Paulette walk together, heads high, down a twilight road. Perhaps Charlie means to signify he has at last found real happiness.

"SHOW THEM NO MERCY." They don't don't neither, no suh. Above-average ganaster story with all the trimmings: murder, kidnapping, chases, torture, and on-spot puttings. Unless your heart's weak, you'll love it. Not much in the way of really new story angles, but some clever touches here and there. Cinemalluring Rochelle Hudson badly mistreated photographically, but did all right personally. Cesar Romero outstanding: credit him with an excellent characterization. Bruce Cabot produced the nastiest heel ever portrayed. You positively airt your teeth with ecstasy at the end where little Rochelle . . . ah, but that's too good a secret to give away.

"THREE LIVE GHOSTS." Dead, all right; but why triple it?

"RIFF RAFF." Directed by J. Walter Ruben. Anything with Jean Harlow in it is automatically okay. That's a premise. Spencer Tracy plays opposite Harlow. Tracy is tops as usual, though you do wish he could have been a fisherman who washed a little oftener. Plenty of unreal spots in the story, such as the one where Harlow, in prison, gives up her baby. But it's good entertainment, and keeps moving every minute.

Joseph Calleja good, but a little too musicomedy as the only cannery boss. Una Merkel, in an insufficient role as Harlow's sister, was grand. We must not forget Mickey Rooney. Photography by Ray June, in spite of drab settings, was outstanding.

"THE BRIDE COMES HOME." Latest effort of the glamorous Claudette Colbert; added efforts by Robert Young and the mushrooming Fred MacMurray. Although sprightly frillery, hardly worthy of the possibilities of the three clever youngsters around whom the story revolves. Difficulty lies in pushing the middle finger down and making the reasons come out here. There's just as much plot as there was in "It Happened One Night," in whose footsteps "The Bride Comes Home" evidently hopes to follow. There are high spots in the film, but too many let-downs occur. Too little made of the piquant beauty of Colbert, a couple of apples hanging on her cheeks all through the picture. MacMurray looked as if he needed a shave most of the time. William Collier, Sr. was false as Colbert's father.

With all this, pic is still good entertainment. High point is the most hilarious marriage ceremony you'll see in a "coon's age." Leaves you weak and trembling. Film is worth seeing for this sequence alone.


"MAGNIFICENT OBSESSION." Etching in celluloid the evanescent spiritual quality of Lloyd C. Douglas's novel is seemingly impossible. Yet director John Stahl creditably performs the task of transferring this ethereal idea to the screen. The many poignant scenes especially are handled with a deft, masterful touch.

When I read the cast I couldn't conceive of Irene Dunne as the unfortunate wife of philanthropic Dr. Hudson, or of Robert Taylor as the young philanderer who later takes up the torch of the famous surgeon. But casting was inspired—each contributed an admirable performance. Robert Taylor is a newcomer that doesn't act like one. I'm glad I'm no girl—I couldn't sleep nights—gawd, but he's handsome! And maybe I'll have to fight my way out, but I think Miss Dunne gave the most realistic, withal the least gruesome, portrayal of a blind person I have ever witnessed.

If the film seems to start slowly, relax; it makes up for lost time. Arthur Treacher certainly does not harm as a very funny valet. Betty Furness and Ralph Morgan earn their salt. A tear falls for Charles Butterworth; one expects so much of him, perhaps. The whistling-among-the-sewer-pipes scene is the only thing worthy of Charlie.

Bring all the handkerchiefs you got for Christmas.

HOLLYWOOD, by The Shovel Boys. (They dish the dirt.) * * * Arthur Treacher having a fine time one day at the races at Santa Anita. He was doing his betting from the bar—and most of his bets were across the board. It was his first day off in months. His chief worry these days is that he competes with Edward Everett Horton and Charlie Ruggles for laugh honors in the Marion Davies pic, "Hearts Divided." * * * Marian Marsh had her appendix kidnapped recently at the Good Samaritan Hospital, and is now recovering nicely at home, thank you. * * * Fay Wray recently returned from England (Fay practically commutes these days) and jumped right into Columbia's "Roaming Lady" with Ralph Bellamy. * * * Incidentally, Ralph left for New York on February 25th, to start a series of personal appearances. * * * Vince Barnett handing out tips at the races. People betting on his advice. They forgot he is a professional ribber. His horse did NOT come in. * * * Hard luck for Eleanor Powell. She tapped the stream of fame and fortune, and then collapsed. She is recovering from a nervous breakdown in a New York hospital. * * * And now Veloz and Yolanda, famous dance team, are running a contest to discover new dance teams. And then the dancing crazy will fizzle out, leaving these couples high and dry. * * * Bette Davis was seen in public several times recently with a peach of a black eye. Her husband didn't give it to her: one of the employees at Warner Bros. Studio was responsible—a make-up man, in fact. Bette was wearing it for her current picture, "Golden Arrow." Arthur Treacher plays in that too, the busy fellow. * * *



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ROLLIE TOTTEROH
AND IRA MORGAN
FOR THEIR PHOTOGRAPHY



INTERNATIONAL PHOTOGRAPHER

—HOLLYWOOD—

TH YEAR

APRIL, 1936

VOL. 8
No. 3



CHARLES RHODES

"THE OLD MAESTRO HAS GOOD CAUSE TO SMILE"

Hal Mohr, Ace Cinematographer and Director of Photography at Warner Brothers, is congratulated by his wife, the famous Evelyn Venable, on winning the Academy Award for Cinematography. Mr. Mohr has long been a bright light as a motion picture cameraman and among his many honors is that of President of Local 659, I. A. T. S. E. & M. P. M. O.

CENTS
A COPY

OTION PICTURE ARTS AND CRAFTS



MODERN TIMES

on Broadway

Charlie CHAPLIN
MODERN TIMES
CHAPLIN

MODERN TIMES



An event eagerly awaited for five years—the World Premiere of Charlie Chaplin in "MODERN TIMES"—turns Broadway into a struggling mob of thousands eager to be the first to acclaim the world's greatest comic.

In every portion of the globe the name of Chaplin means box-office magic, for his actions speak every language.

Photographed by
ROLLIE TOTHERO
and
IRA MORGAN



REG. U.S. PAT. OFF.

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"Open Wide that Golden Gate!"



An infra-red taken from Pylon S-1 showing the great fender wall surrounding the San Francisco tower and the footbridge walks with the completed storm system underneath. Through the deck level of the tower may be seen the footbridges reaching out to the Marin tower, 4200 feet away.

INTERNATIONAL PHOTOGRAPHER

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HOLLYWOOD, APRIL, 1936

No. 3

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Frontispiece by our newsreelers at San Francisco

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Our Menu for May, 1936



Earl Theisen will conclude Part II of "The Evolution of the Motion Picture Story."



Frederick Westerberg will contribute four more tables to "The Cinematographer's Book of Tables."



Paul R. Harmer will continue his series—Intensity of Light Under the Sea.



Lewis W. Physioc begins his article on "Censorship," the best on the subject ever written.



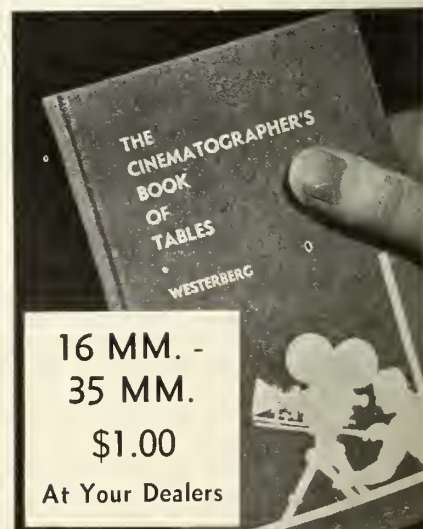
Charles Felstead contributes Chapter XXV on Motion Picture Sound Recording.



Karl A. Barleben, Jr., F.R.P.S. will contribute two yarns in his own inimitable style and on his pet subject "Miniature Photography."



Delmar A. Whitson promises an authoritative article for May on his favorite subject, "Polarized Light."



"Wandering With the Leica"

By HANSENA FREDERICKSON

Our Lady Globe Trotter in the Orient



IF ONE has ever traveled with a snap-shot camera and switched to a Leica or any camera which is completely adequate, he will understand why I have pushed the button on my Leica 1,000 times since I left Los Angeles two months ago. It is a relief to be able to catch the moods and moments that with the ordinary camera are impossible. One group of negatives that I shot was an attempted series of sunrise shots over Diamond Head, in Honolulu, morning clouds on the Pali, and the sun-shot mist making the ship's entrance into

been in the country long that he should get a gold cage and crawl into it, so as to be the more easily stared at.

The Japanese Sigh for Color

In Japan the photographer sighs for the perfection of color film. The costumes, the autumn leaves peeking through the snow, the dull lacquer-red shrines, and the gay flag-hung streets cry aloud for color film. In China this isn't felt as much, because the color here is all blue, until one gets out into the country. The streets of Shanghai itself are a blur of blues. When the various objects are segregated they become the sheath-like dress of the Chinese in all shades of blue and black. The black is either rusty, purple-black or a gray-black. The one obvious note of color becomes very dramatic and romantic. It is the turbaned traffic cops. They are the Sikhs imported from India. These swarthy, heavy-featured men with their thick, dark beards wear gay and artfully wound turbans in the most subtle shades of yellow-green, odd purples, canary yellow, blue-green, salmon pink, and turquoise. When these colors are set off by the handsome dark features of the East Indian, they lend a fantastic note to the city's traffic.

The Sightshooters

The use of the camera is gradually becoming the rule rather than the exception and a bond is felt between all "sightshooters" as it is among sightseers. On the ship coming across the Pacific there were several miniature cameraists aboard, some home movie camera users and many snapshooters. The Leica enthusiasts were all interested in doing their own developing on board in order to be sure that the results that they were getting were the best possible. We asked for the use of the dark room on board and bothered the dark room steward at all times of day. He finally had to shut us out in order to get some of his own work done, so we resorted to the old standby, crawling under blankets to do our work. We all got expert at this sport and loaded cameras, filled developing tanks and checked up on maimed cameras in this manner.

Small Cameras Busy

Each minicam user had a different light meter and we had many a conference ending in an argument as to what reading was correct. In the end we all read our own and each achieved the result that he wanted. We would all take the same general shot, such as sunset rays over the bow, a group in the swimming pool, huge waves on a stormy sea, and each picture would be entirely different as each photographer saw a different mood in the shot. We of the small cameras took many more shots than did the other photographers and, as a result, we have had to send prints of some of our prize shots to passengers scattered in all parts of the world. One day a group of four started choosing pictures from my

(Turn to Page 24)

Right Angle View Finder

When it comes to crowded, festive streets in Japan on one of their frequent national holidays, the right angle view finder is invaluable. The Buddhist priests object to having their photos taken and will create a disturbance if they catch you at it. Some of them are unbelievably picturesque and can easily be taken home in your camera if the angle view finder is used. When I first started using mine, I wondered if they wouldn't catch on to the trick, but they were too busy watching the foreigner and her clothes to wonder about where her camera was pointing, until it was trained directly upon them.

The Japs Know Their Cameras

It is easier to use the camera in Japan than in China. Every other Japanese gentleman owns a camera of some kind, and the people there are more or less used to the instrument. The Japanese themselves are great travelers within their own country and make pilgrimages to all the shrines. The difference between the foreign and the Japanese tourist is that the latter is not interested in taking pictures of the people and their life. It is the foreigner who shoots the queer, narrow, colorful side streets, the funny wooden stilt-shoes, the vari-colored kimono and the living conditions on the flat barges. This marks him for attention and he feels before he has



Broadcast Studio Photography

By KARL A. BARLEBEN, JR., F.R.P.S.

Dean of New York Institute of Photography

THE average radio broadcast studio is closed to photographers, particularly amateurs, yet there are sufficient programs and contests going on all the time during which cameramen are permitted to use their cameras that a few words on the subject may be useful. It has been my good fortune to have been permitted to various broadcasts with my camera, and also to broadcast from various stations, hence I feel fairly well qualified to write on the subject.

The one thing that is liable to attract most candid camera photographers is the unusual facial expressions to be caught during a broadcast. As people speak they often produce startling expressions—quite unknown to themselves. Do I know! This is, on the other hand, a point to be carefully watched for. By means of it, otherwise good shots can be ruined, particularly if the subject is wanted at his or her best.

As for technique—the first thing is naturally to secure permission to photograph. Do not under any circumstances try to force the issue or sneak a camera into the studio if permission has been refused. This is one of those cute tricks that does no one any good. It merely bars photographers in general all the more definitely from the studio in the future. Some programs arrange special events for amateur photographers.

For instance, last year the Eno Company, through its advertising agency, L. W. Ayre & Son, arranged a "candid camera night" to be held during one of the popular Eno Crime Clues series. One hundred and fifty passes were issued and placed only in the hands of deserving cameraists. The studio in which this program originates in Radio City, New York City, was especially lighted for the occasion by a dozen or more high-powered Mazda lamps in suitable reflectors. These were furnished by the station. Two rehearsals of the program were called, prior to its going on the air, and as they were run through, the cameramen present were privileged to snap pictures to their heart's content. During the actual broadcast, however, no one was permitted within the field of action, but those who wished, were invited to remain and see the air presentation.

Needless to say, a gang of cameramen, bent on making suitable pictures to submit for competition for the \$100.00 first prize offered for the best picture made at the event by the Eno Company, is not especially careful—nor quiet. Secretly I felt sorry for the actors who had to work through those two rehearsals with lenses aimed at them, shutters clicking like machine guns, and here and there an overly-ambitious cameraman worming his way on the floor for "angle shots." However, all went well, and surprisingly good pictures were submitted to the

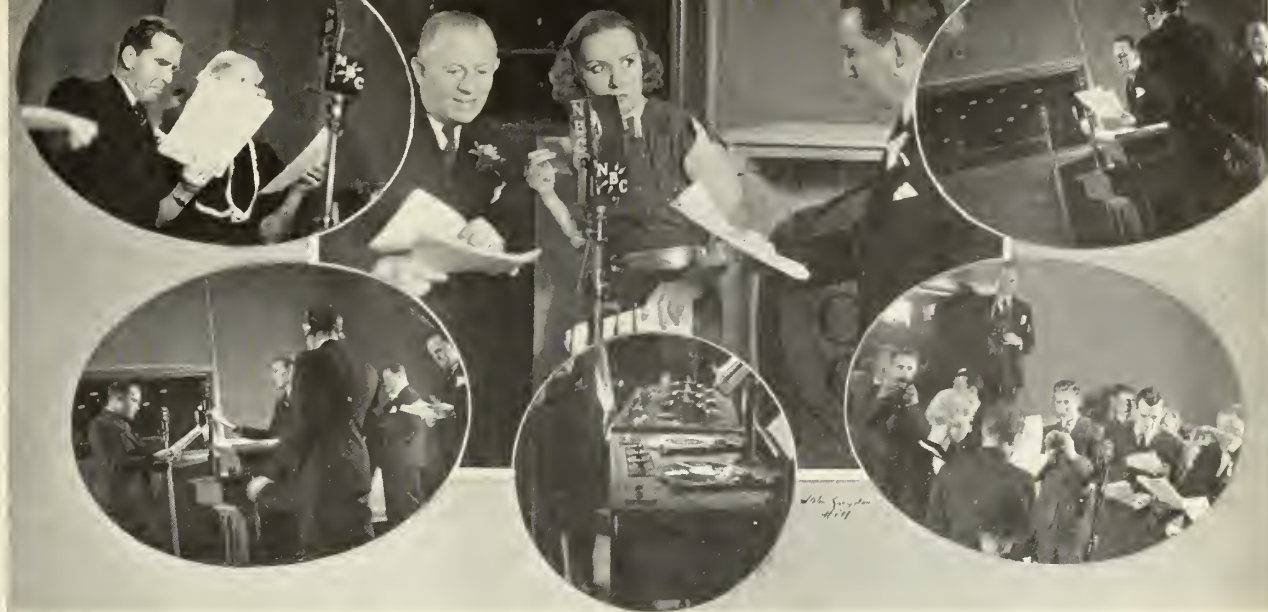
contest. Adolf Fassbender, F.R.P.S., famed pictorialist, was present to give some words of advice to the cameramen, although his presence was more in a visitor's, rather than an overseer's, capacity. He served, incidentally, as one of the judges on the jury which selected the prize-winning prints.

This event was perhaps the first of its kind to be staged by a leading radio station (WJZ of the National Broadcasting Company's Blue Network). It was a success, needless to say. But things were rosy, for everything was prepared for the cameramen. During the average broadcast one does not find such ideal conditions. Rudolf H. Hoffmann, specialist in stage and radio star candid shooting explained—or rather complained—to me that in studios where he is called to work, he has to actually bribe the electricians to give him enough light to work with. In fact he has to come to the point of toting around his own lighting units because of his inability to get the proper co-operation from the "juicers" at the studios. Now and then he bumps into the temperamental tantrums of radio stars—they won't face this way, the lights hurt their eyes, they don't like the angle from which he photographs them, and so on. Yes, my friends, it is not exactly a life of ease which Rudy Hoffmann leads, in spite of its glamorous aspects from the outside.

So granting that you have gained permission and entrance, your troubles are not by a long shot over. See to it that lights are available, at least enough to enable you to get a decent exposure. In the end you may have to wind up by bringing along your own pair of Photoflood lamps and reflectors.

The camera best suited to radio studio photography is of course one that is easily and quickly handled and equipped with a speed lens and film. For this reason, miniature cameras are usually regarded as ideal outfits for the work. Their small size, quickness in operation, and ability to be fitted with fast lenses make them practical. As tripods are quite out of the question, shutter speeds of not more than 1/5th of a second (if you can hold it that long) are indicated. To make sure, use a shutter speed of 1/25th second. The camera must be hand-held.

Because the click of the shutter is audible over the microphone, and it is extremely disturbing to be darting about during an actual broadcast, most radio pictures are made as posed shots or during rehearsals. Once when Ivan Dmitri, number one candid camera shooter, gave a short talk over station WNEW in New York City, I shot some negatives of him before the microphone. I hardly got to first base that time, for I found not enough light to make the feeblest impression on the film. Luckily I was armed with a speed-gun and a few Photoflash lamps. These did the trick. I got Dmitri in



Upper left—Edward Reese, who is Spencer Dean the man-hunter of the Eno Crime Clues broadcasts, which go over the Blue Network (NBC) every Tuesday evening, doing his sleuthing in front of the microphone during a broadcast in Radio City, New York City. Dialogue between two actors during an Eno Crime Clues broadcast at station WJZ. Production man at desk in foreground. Upper center—Principals in the Eno Crime Clues broadcasts during an actual broadcast at station WJZ located in Radio City, New York City. The sound effects department—whistles, trains, fire engines, automobiles, music—all comes from these effect records. Upper right—The production man (in foreground with ear-phones) pauses while the announcer introduces the Eno Crime Clues program. Station WJZ (Blue Network), Radio City, New York City. A group of amateur candid cameramen during a rehearsal of an Eno Crime Clues broadcast in the studios of WJZ. These amateurs were competing for a fifty dollar prize offered by the Eno Company, sponsors of the broadcast series.—Photographs by Karl A. Barleben, Jr.

front of a microphone and blazed away—during the rehearsal. But it just goes to show how uncertain the whole business is.

About a year later Dmitri came back at me, but fortunately with better equipment. It was during one of the broadcasts of the Behind the Lens program of which I am technical director, over station WHN. Dmitri was my guest speaker for that particular program, and as it is a rule to have several Photoflood lamps in reflectors in studio C—from which we broadcast—he had no difficulty in catching me in action. Our program, incidentally, is one of the very few during which it is permissible to make pictures during the actual broadcast. The picture of me at the microphone was made during the actual airing of the show—and I was in the midst of "doing my stuff." No fake to this—it is a genuine candid shot.

The clicking of cameras, however, is something of an annoyance, I can assure you, for I have to stand it every Saturday evening during the WHN Behind the Lens program. The bright lights do not help to make matters easier in reading the script, either. However, as it is a photographic program, passes are issued to members of the Behind the Lens Club and they are entitled to bring their cameras and shoot during the airing of the show. Funny how people will turn their nose up at shooting during a rehearsal if they can snap you during a broadcast. My friends who are interested enough to listen to the program tell me that the camera-

clicks come through the microphone fairly distinctly. But then, it's a lot of fun and if the folks like it, we let them have it.

The trick to make pictures realistic is to always include a microphone in the shot. Regardless of whether it is dead or not, it always definitely stamps the picture as having been made in a studio. It explains a lot, that little mike. Another trick is to use angle shots. It seems to lift the picture out of the general run of pictures. Hoffman and Dmitri, I notice, rarely take a straight on view. Always they get on the floor, or at least on their knees, or again high above, on a chair or other elevated structure, if there is one handy. This makes swell action in an otherwise more or less lifeless picture.

The control room fascinates many cameraists. They attempt to carve through the plate glass and catch the control man, but usually they are met with defeat. That glass simply won't behave, for it reflects all images and lights in the studio. Then, too, the control room is usually in darkness. It's a difficult job at best. I've tried to catch my own production man, Gene Stafford, at the WHN controls during rehearsal, but have failed miserably. About the only way of shooting into the control room is to illuminate it fully and then shoot through the glass, taking care to avoid all reflections—some job.

Announcers are almost always attractive men with beautiful voices. My announcer at WHN, with his tiny mustache, is a perfect shot for any camera. But Gene Marshall is a bit camera-shy and it is not so easy to catch him at the microphone. However, Stafford and Marshall have, since working on the Behind the Lens program with me, become camera-conscious. Both want cameras now, and have learned of the delights such an instrument can give them. The WHN staff cameraman, Gene Lester—yes, I know there are too many Gene's in my program but what can I do about it?—turns out some really grand stuff with his baby cameras. He usually sees to it that our studio is properly lighted—and he shoots grand stuff himself.

All in all, radio photography is exciting and fruitful of excellent pictures—if you go about it in the right way. If you happen to have the opportunity of getting some studio pictures, by all means make the most of it. The results will be unusual and different from the ordinary run of pictures.



THE NATIONAL ARCHIVES

(From the First Annual Report of the Archivist of the United States,
John G. Bradley, Chief of Division of Motion Pictures and Sound
Recordings.)

Division of Motion Pictures and Sound Recordings—This division is set up under Section 7 of the National Archives Act, which authorizes the National Archives to accept, store, and preserve motion picture films and sound recordings pertaining to and illustrative of historical activities of the United States, and to maintain a projecting room for showing such films and reproducing such sound recordings for historical purposes and study.

Although the motion picture industry has reached enormous size, it is still in its infancy from the viewpoint of experience in the solution of the many problems relating to the preservation, storage, and safety of motion picture films. The division will conduct scientific researches into methods of reproduction and processing; into the storage and preservation of motion picture films with special reference to the elimination of fire risks and other hazards. It will classify, arrange, and catalogue its collection of films and sound recordings, make duplicate copies of each original film for purposes of preservation and for projecting, reconditioning films in order to remove harmful chemical impurities, maintain a projecting room for showing such films and for reproducing such sound recordings, co-operate with government and other research agencies in scientific research, and furnish reference and information service to the other professional divisions of The National Archives and to searchers. . . .

Storage and Preservation of Motion Pictures

Films—The most pressing problems connected with the acceptance of motion picture films by The National Archives, and those to which greatest attention was given, concern the storage and preservation of films and the protection of The National Archives Building and its contents from possible fire hazards that might result from the storage of motion picture films in it. In his efforts to find satisfactory solutions to these problems, the Chief of the Division and his staff have spared no pains or trouble. Many conferences were held with the chief producers and distributors of motion pictures in this country as well as with private chemists and engineers, the Society of Motion Picture Engineers, the Office of the Fire Marshal of the District of Columbia, the motion picture experts of the Departments of War, Interior, and Commerce, and of the United States Bureau of Standards. The results are discussed in the report of the Chief of the Division, p. 53. . . .

Division of Motion Pictures and Sound Recordings

(From the report of the Chief, Mr. Bradley.)

This Division was organized with the appointment of its Chief, John G. Bradley, January 19, 1935.

It is the function of this Division to carry into effect the provisions of Section 7 of The National Archives Act, which is as follows:

"The National Archives may also accept, store, and preserve motion picture films and sound recordings pertaining to and illustrative of historical activities of the United States, and in connection therewith maintain a projecting room for showing such films and reproducing such sound recordings for historical purposes and study."

For these purposes The National Archives Building contains eight concrete vaults for the storage of films and a projecting room for showing them.

The motion picture industry is still in its infancy and its experience sheds but little light on the problems of durability and preservation of films. There is very little published literature on the subject. The Division of Motion Pictures and Sound Recordings, therefore, is to a considerable extent, pioneering in a new field. The problems with which the Division has been chiefly concerned are: (1) Accessions, (2) Preservation, and (3) Service.

Accessions

Either by direct authority, or by inference from The National Archives Act, accessions of motion picture records and sound recordings may be made through four channels: (a) Direct transfer from other Government agencies; (b) gifts from non-federal institutions; (c) purchase under contract; and (d) recording.

Transfer—A preliminary survey was made by mail to ascertain what motion picture records and in what quantities, were to be found in the various departments, agencies, and independent establishments of the Government. Although this was by no means an accurate study, it revealed some five million feet of motion pictures and many thousands of phonographic records. The films included the World War films of which there are nearly a million feet, pictures of tribal life among American Indians, studies in sanitation, agricultural extension pictures and others.

The disc recordings included studies in primitive languages, folk music, etc.

Gifts—In a lesser degree the non-federal field has been surveyed for source material that might come to The National Archives as gifts. The offers have been generous and include far more than can be accepted. The problem has become, therefore, one of selective discrimination. It will be well, however, to consider some of these accessions seriously—

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such pictures as show the early history of our country in the making; pictures of explorations, such as the Byrd Polar Expeditions; pictures of Indian and Filipino tribal life; pictures of the inauguration of Presidents; news reels of historical value, etc.

Purchase and Recording—A study has also been made of possible subjects that would justify recording at public expense either through purchase under contract or by actual recording. There are many current and future events of historical importance which will probably not be recorded unless The National Archives makes provisions for doing so.

Preservation

In the matter of storage and preservation some very definite steps have been taken toward perpetuating film records over a long period of time. The Chief of the Division personally visited a great many cities, institutions, and individuals, seeking help—Hollywood, Motion Picture Producers and Distributors of America, Inc., Eastman Kodak, Academy of Motion Picture Arts and Science, DuPont, Radio Corporation of America, Electrical Research Products, Inc., and others. The question was constantly asked: "How can motion picture films be preserved for one hundred years?" The answer (in substance) was generally: "We are interested only in producing and selling pictures"; or "We are interested in the manufacture and sale of film and are not, therefore, primarily concerned in preserving such property for any great length of time."

However, valuable help and information was received from each visit and by placing this information together storage specifications were worked out and submitted in a memorandum of May 13th. In brief, these specifications included insulated fire-proof cabinets within the concrete vaults of the main motion picture storage vault system. In these cabinets each one thousand feet of film is to be isolated in a separate compartment, vented to a stack flue which leads to the exterior of the building. Each compartment is to have a gravity trap door that will permit quick and easy egress of combustion flames or gases to the exterior and prevent ingress of these same gases to the film compartments. The flues leading to the exterior are to be provided with proper insulation to prevent heat conduction and a return of outside air; so that, in brief, the preservation plans comprise, in addition to editing and conditioning, the following controls:

- (a) Temperature control
- (b) Humidity control
- (c) Air content control
- (d) Heat conduction control
- (e) Air connection control

The Chief of the Division has been made a member of the National Research Council's Advisory Committee to the Bureau of Standards, further to study preservation of motion picture film, and also

chairman of the Film Preservation Committee of the Society of Motion Picture Engineers which will furnish additional and valuable help in the study of this problem.

Service

In approaching the problem of servicing, the only completed work is that of writing specifications for storage and for motion picture and sound recording equipment. In this, help was given by various federal agencies interested in motion pictures and by several non-federal institutions. These specifications were submitted May 13 and June 26, respectively.

As a consequence of his travels and studies, the Chief of the Division made some valuable contacts which should prove of inestimable value in the future development of this Division. He was also called upon from time to time to counsel with various federal and non-federal institutions with similar functions in working out their problems. Among these may be mentioned the Division of Motion Pictures, Department of Interior, on problems of storage; the American Society of Photogrammetry, also on storage problems; the Smithsonian Institution, on sound recording; the Rockefeller Laboratory of Archaeology, on recording.

The work of the Division may become materially handicapped unless preservation of motion picture films is interpreted to mean preservation of motion picture records. The present language of Section 7 of The National Archives Act limits the work largely to that of curating. Preservation of a motion picture film has a definite limitation but if the concept were enlarged to include preservation of motion picture records by all necessary means, including duplication, The National Archives could look forward to a more successful effort in preserving this material as permanent archives of the Government.

"BROKEN EARTH"

A little gem if there ever was one is this one-reeler recently produced by three cameramen and given its first showing to newspaper men at Bell & Howell Auditorium, Thursday, March 24.

This delightful and technically perfect picture has to do with a negro spiritual, entitled "Broken Earth" and written by Clarence Muse and Roman Freulich, the latter still photographer at Universal Studios. Mr. Freulich also directed the picture.

His associates in production were King Gray and Jerome Ash, with Michael Walsh acting as assistant.

The picture was "shot on two Sundays and a shoe string," as Mr. Freulich described it, but they had good luck and it looks like a winner.

Appropriate music was furnished by the Los Angeles Ethiopian Choir of forty-five voices, directed by Frieta Shaw.

Mr. Muse, collaborator, is a negro actor of great talent, and "Broken Earth" is a mild glorification of the spiritually minded negro. He is author of the successful song, "Sleepy Time Down South" and was cast in "Hearts in Dixie," "Porgy" and other pictures and plays.

BORN

In Hollywood, March 27, 1936, to Mr. and Mrs. Ray Fernstrom, an eight and one-half pound boy. Mr. Fernstrom is an internationally noted newsreel cameraman.

35mm. Eastman Super X

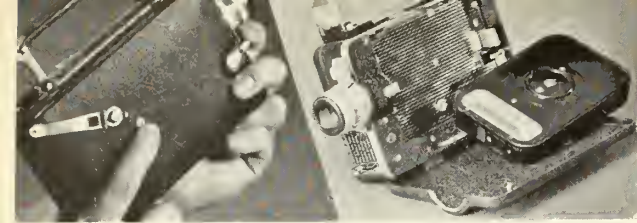
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The New 16 MM. Magazine Cine-Kodak Camera

(CONTRIBUTED)

HASTMAN Kodak Company has produced a new 16 mm. Cine-Kodak loading with a magazine and having other features further simplifying the taking of motion pictures by the amateur and at the same time providing him with increased versatility of operation.

In addition to the use of a magazine, thereby eliminating the operation of threading the film, the new camera has three speeds, interchangeable lenses, a device that prevents accidental exposure while the camera is not in use, an automatic shut-off for the spring motor, and an ingenious device described as a "pulse" for timing the length of scenes.

Appropriately named "Magazine Cine-Kodak," it can be loaded in three seconds, merely by opening the hinged cover of the camera, as if it were a book, slipping the magazine inside and closing the cover, without having to adjust a single thing inside the camera or on the magazine. Sliding a finger tab on the top of the camera releases the cover for opening and locks it when closed. A further slide of the tab sets the mechanism for operation. Until this is done, the mechanism remains locked and there can be no accidental exposure.

Another eminent advantage is the ability to exchange partly used film for another type without having to run the entire footage to do so. Thus, to switch from Panchromatic to Super Sensitive "Pan" for indoor pictures or to Kodachrome for color "movies," it is only necessary to remove the partly used magazine and replace it with a magazine loaded with the film desired. A magazine can be removed without the necessity of wasting a single frame of film because of a protecting slide which is moved over the film aperture of the magazine by the same operation that unlocks the cover of the camera. One may have any number of partly used magazines which may be returned to the camera to complete the exposure. The magazine protects the film. A footage meter on each magazine shows how much film has been used, whether in or out of the camera. The dial may be plainly seen through a shutter-proof window in the camera cover.

The Magazine Cine-Kodak also gives the amateur increased versatility in speeds. There are three of them—normal, half speed and slow motion—controlled by a lever located beneath the built-in exposure guide on the front of the camera and marked "8," "16" and "64."

The new and intriguing device called a "pulse" is located in the side of the camera—a tiny button over which the finger is placed and which "beats" every half foot, or 20 frames, while the film is being run. This is of great convenience in timing the length of a scene.

For the Magazine Cine-Kodak are supplied the same accessory lenses available for Cine-Kodak K and Cine-Kodak Special—the 2-inch f.3.5 and the 3-, 4½-, and 6-inch f.4.5 telephoto. There is an inexpensive adapter which fits them to the camera by a simplified method. To make a change to any one of the four, the standard f.1.9 lens is removed merely by pressing a button, and turning the lens. The adapter fits as easily in its place. Then the

other lens is fitted on by sliding a lug on the lens into a slot in the adapter; the rotating collar is given a turn or two, and the lens is set in positive, taking position.

In focusing, guess work and squinting are taken out by the full-vision eye-level finder system, which competently serves all lenses. The front view finder has two elements. Together they show the field of the standard f.1.9 lens. By sliding the rear element backwards along a track it "clicks" into a notch identified by an arrow as the position for use with the 2-inch lens. Another move backward and it further narrows the field as it slides to the position for the 3-inch lens. Again in the same way for the 4½- and 6-inch telephotos.

Two other features of this camera are the secured winding crank, which swings back into a notch in the case when not in use, and an automatic shut-off for the spring motor, which insures against over-exposure when the motor is in need of winding.

OUR NAVAL MILITIA


On the night of February 21, at the Clark Hotel, in Los Angeles, the California Naval Militia had its annual dinner, which was attended by sixty-two officers. Commodore George Hurst and Commander L. F. Brown presided.

Commodore Hurst assured the officers that steps were now being taken to federalize the California Naval Militia as soon as the enlisted personnel reaches the required number.

Many rates are now open to young men who are qualified to follow the navy life, either as a hobby or as a profession. Every branch of naval service is included in the organization.

THE INTERNATIONAL PHOTOGRAPHER is especially interested in the California Naval Militia, because it was in the offices of this publication at 1605 Cahuenga Avenue, Hollywood, as far back as 1932, that the organization of a naval unit for the protection of the local coast line was discussed and planned. Many officers and men who are now active in the present set-up were recruited in these offices.

Naval Militia, we wish you good luck and success: "We salute you, sailors."



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Intensity of Sunlight Under Sea

By PAUL R. HARMER

MANY interesting articles have been written regarding the intensity of light under sea, but very little of this data has been used by undersea photographers with any degree of certainty.

Several factors are responsible for this condition and, when this series of articles which I am writing for THE INTERNATIONAL PHOTOGRAPHER is concluded, I hope to have been of assistance to the photographer.

Professor Burt Richardson made many tests during the past five years off the coast of Southern California, and, while gazing upward with a light sensitive cell he found that one-quarter of sunlight is absorbed in the first inch of water; that one-half of the light fails to reach ten feet; that nine-tenths of the light fails to reach fifty feet and only a trace

Observed by Beebe with Cinophot	
Depth Feet	Horizontal Light Candles Per Sq. Ft
0	
50	10.4
100	3.37
200	0.41
250	0.21
300	0.15
350	0.12
500	0.02
800	0.02

Figure 2

of light reaches two hundred feet, green predominating to this depth.

One-half of all blue light is absorbed in the first

ten feet; one-half of all blue-green light is absorbed in the first thirty feet; one-half of the more penetrating green light is absorbed at thirty-five feet; one-half of all red light is absorbed by the first few inches.

Professor Beebe describes his descent into the sea as follows: "It was midday, with bright sunlight on the surface. At fifty feet the water was a brilliant bluish-green; at one hundred feet there was the effect of slight twilight and chilling blue. This blue became weaker as I descended to greater depths. At five hundred feet a strange illumination was encountered and at fourteen hundred feet a strange transparent blue."

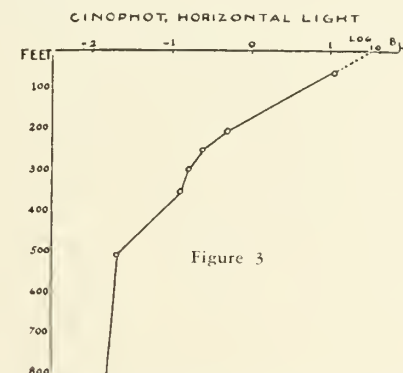


Figure 3

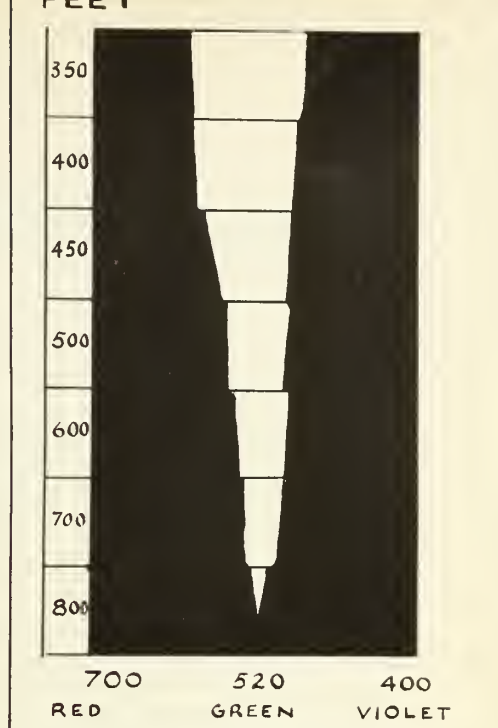
As far as Professor Beebe's eyes could see there was no change in light values from five hundred to eight hundred feet and he was able to read large print at eight hundred feet.

The spectroscope which he used to measure the kinds of light gave a slightly different record.

Fig. 1 illustrates how the light green (almost a blue-green) persists to further depths than any other visible light. This illustrates a diminishing wedge of light.

Fig. 2 is a table showing the comparative light values at different depths.

Fig. 3 is a graphical explanation of the same observations. These observations were made by a Cinephot Exposure Meter and the readings translated to candles per square foot in the laboratory with a comparison light. Fig. 3 shows more plainly how the intensity of light varies from a straight line or a regular curve. The irregularity of these light values is not fully accounted for, but it is probably due to animal, vegetable or mineral matter in suspension.



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Fig. 1

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Lens Apertures Versus Printer Points

By PETER PARNELL

IN the course of a good many years developing negative film and contacting cameramen, the writer has often been faced with the query from many of them **just what the exact reaction is in printer points when a lens is stopped down or opened a full doubled stop.**

Unfortunately, in a good many cases where actual tests never have been made it has resolved itself into more of a series of individual interpretations quite at variance with one another rather than a basic guide dependent on corroborating tests, repeated from time to time in the laboratories due to the changing conditions therein.

Paralleling this condition too, are the printer variations and quality changes resulting from the use of the longer (telephoto) focal length lenses shot from the same set-up at the same exposure with the resulting expressions of wonder from the cameraman as to the often adverse result.

It occurred to the writer that a few analytical tests (repeated by others if desired under the conditions prevailing in different laboratories) would be helpful, consequently a few tests were made in one with the results checked as closely as variations of the human eye permitted. An exterior location with consistent sunlight was chosen.

Though the exposure meter is still a disputed instrument it was used as a check on the light variations, which proved nil however, as the tests were made in a short time and any slight change that might have registered was negligible.

Inasmuch as solution gammas and densities vary in different laboratories results from these tests would not coincide exactly with those of another laboratory, though the essentials remain constant, and tests are advised for differing conditions of development.

The first tests were made with lenses ranging in order from the 25 mm. to the telephoto of 150 mm., from the same set-up all shot at F:12. Here two interesting things were ascertained: The practical aspects of the optical theory—"that light possesses a certain intensity at the diaphragm aperture and diminishes in proportion to the square of the distance between the lens and the sensitive plate"; and the reason the wondering cameraman exclaims at the difference between the exposure and quality obtained with the two-inch lens and that obtained by the second cameraman with a four or six-inch lens from the same set-up both using the same lens stop.

Theoretically, the F number represents the F value **only** when the lens to plate distance corresponds to the maker's focal length and aperture speed as applied to objects at a distance (infinity), and the moment the so-called bellows distance is increased the **actual** F value changes, so that in theory if a lens with an F:8 aperture were racked out to make a life-size copy its extension would be doubled with a corresponding increase of exposure, as the aperture would then become F:16.

For practical purposes one need not draw the

line so fine as variations are permissible and capable of being rectified in development, but the few findings still remain interesting.

Below is a scale of aperture exposures and printing lights:

Lens	Aperture	Printing Light
150 mm.	F:12	9
100 mm.	F:12	11
75 mm.	F:12	12
50 mm.	F:12	13
25 mm.	F:12	15

It was found that the exposure at F:12 was in too low a key for the longer focal lengths while the 25 and 50 mm. lenses were at an intermediate place on the printing scale; the 25 mm. lens printing on light 15 and the 50 mm. on light 13. Here already is a difference of two printer points with the 50 mm. negative requiring (for a finished print) slightly more development to match the contrast of the shorter lens.

While the 75 mm. lens dropped one point to 12 (taking the 50 mm. as standard) a more pronounced dropping off in brilliancy was marked which would have necessitated prolonged development to bring it to the density and contrast level of the 50 mm. lens.

The 100 mm. lens fell another point lower with a decided increase of flatness and at the low aperture of F:12 with the 150 mm. lens, plus the increased separation between lens and film we get a negative printing on light 9 as compared to 13 (50 mm.) but with such lack of exposure and contrast that forced development would add little but chemical veil.

These tests reveal that the 25 and 50 mm. lenses though shading the under exposed side, with little more than normal development make a negative that prints in the desired portion of the printer scale, possessing good brilliancy and density and quite acceptable from all standpoints.

The 75 mm. lens produces a flatter negative which, while its density can be increased gains very little in added contrast, remaining virtually what it

(Turn to Page 20)

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Avalanche of Color On the Way

(Contributed)

Hollywood acclaimed "The Trail of the Lonesome Pine" as the first successful color picture that has ever been made, but experts who have been shown reels of the new Pioneer production, "Dancing Pirates," say that the use of color in this picture is even more revolutionary.

Back of the success of these color pictures lies the work of Max Factor, veteran Hollywood make-up artist, who was allowed, for the first time, free rein in the make-up applied to the actors.

"No color picture can surmount improper make-up," a well-known cameraman admitted, and added that half the faults of color photography to date have been unrealistic make-up effects!

Mr. A. B. Shore, in charge of the make-up department at Factor's, recently said: "The new make-up we have developed for color pictures is revolutionary. The range of colors employed has multiplied ten-fold in an attempt to reproduce faithfully colors matching the skin tones of the subject.

"First of all, the new make-up is of skin-stain consistency. It is so thin that the effect is somewhat like a thin coating of tan, permitting the natural flesh tones to show through.

"Naturally, highlights and shadows cannot be employed and less latitude is given for what is known as correction make-up. Imperfections of features or skin can be disguised no more successfully than with street make-up the average woman wears.

"Rouge we applied to the lips of actresses in recent color pictures, for instance, is five times as light as rouge worn by women for street wear. We advised Steffi Duna, appearing in 'Dancing Pirates,' to bite her lips before each close-up to make the blood come to the surface and give them a more natural appearance!"

Recently Factor discovered a secret shade of hair which will photograph chalk-white, and this was

used for the white wigs in "Dancing Pirates." Formerly the color camera photographed white wigs in unbecoming shades of blue and it had been thought impossible to make pure white hair photograph white. Experiments were tried with 300 different shades before the "secret" shade was discovered.

Another innovation color demanded was individual make-ups for all players, from the humblest extra to the most important star. Make-up men working on "The Trail of the Lonesome Pine" spent as much time and effort over the make-ups for each extra as for that of Sylvia Sydney, the star.

"We wanted to avoid a fault of former color pictures," Mr. Shore said, "in which atmosphere players, in the background, looked badly made up. Variations of the human complexion must be carefully studied to retain individuality of type."

The importance of this new make-up is proved by the number of color pictures now being produced in Hollywood. "Trail of the Lonesome Pine," "Dancing Pirates" and "Changing of the Guards" are three of the newest. In addition, Samuel Goldwyn plans to make two features in color. Douglas Fairbanks, Sr., will film "Marco Polo" in color. Warner Brothers plans three shorts and two full length features. Walter Wanger has four color pictures in preparation. RKO will do a series of western pictures in color. And Pioneer intends to produce two more full length color pictures after "Dancing Pirates."

If these pictures bring about the revolution in Hollywood which is confidently expected by technical experts, who say that after viewing several color pictures, black and white photography will seem dull and boring to audiences, Max Factor will have contributed as much as he did with the introduction of panchromatic film, when his new panchromatic make-up was adopted as a standard by almost every film studio in the world.



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By ROBERT FULWIDER

Attorney at Law

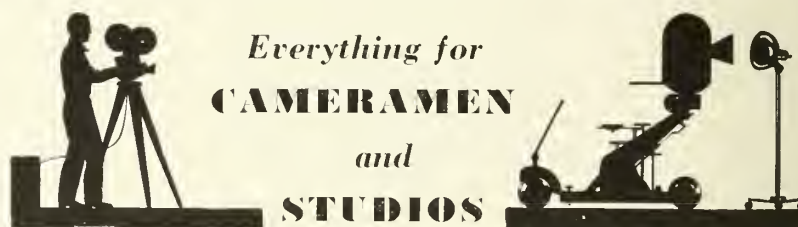
- 2,029,300—Method and Apparatus for Producing Stereoscopic Effects. Newton Arfsten, New York.
- 2,029,306—Motion Picture and Sound Cabinet. W. R. Bull, Pelham Manor, N. Y.
- 2,029,418—Reflex Shutter. Max Friedland, New York.
- 2,029,500—Composite Pictures. Willis H. O'Brien, assignor to R. C. A.
- 2,029,614—Apparatus for Taking or Projecting Lenticular Film. F. Fischer, F. Strecher and H. Neugebauer, assignors to Siemens & Halske, Berlin, Germany.
- 2,029,703—Cinematograph Apparatus. B. E. Lubcshez, Harrow, England.
- 2,029,736—Motion Picture Camera. Kurt Morsbach, Berlin, Germany.
- 2,030,098—Sound Picture Record. T. W. Case, assignor to Case Research Laboratory, Auburn, N. Y.
- 2,030,163—Color Photography. T. T. Baker, assignor to Dufaycolor, Ltd., London, England.
- 2,030,300—Composite Photography. Fred Jackman, assignor to Warner Bros. Pictures, Inc., New York.
- 2,030,428—Sound Recording System. M. Chambers, assignor to Western Electric Co., New York.
- 2,030,446—Apparatus for use in Color Photography.
- 2,030,447—Multicolor Screen for use with Lenticulated Films. Edgar Gretener, assignor to Opticolor Co., Glarus, Switzerland.
- 2,030,465—Receptacle for Motion Picture Film. Joseph T. Nist, Canton, Ohio.
- 2,030,489—Projector. Russell E. Wilson, Cleveland, Ohio.
- 2,030,760—Method and Means for Recording Sound. C. L. Oswald and W. D. Foster, assignors to Kinatome Patents Corp., New York.
- 2,030,795—Color Cinematography. V. Hudeley and L. Lograve, Paris, France.
- 2,030,812—Projection System. R. F. Dirkes and R. Steeneck, assignors to Western Union Co., New York.
- 2,030,903—Photographic Film for Color Photography. Hans von Traunhofer, assignor to Omnicolor Corp., New York.
- 2,030,904—(Same.)
- 2,030,973—Method and Apparatus for Recording and Reproducing Sound. Merle Duston, Detroit, Mich.
- 2,031,032—Means for Mixing the Color Element Images in Multicolor Screen Photographic Printing and Projecting. Walter Chapman, assignor to Dufaycolor, Ltd., London, England.
- 2,031,079—Device for Rewinding Film. H. J. Streyekmons, assignor to Automotion Pictures, New York.
- 2,031,608—Talking Motion Picture Apparatus. J. R. Kiel, assignor to Auditone Co., Chicago.
- 2,031,635—Film Reel. Herman de Vry, Chicago.
- 2,031,756—Film Feeding Mechanism for Sound Films. Ewald Boecking, assignor to International Projector Corp., New York.
- 2,031,794—Motion Picture Sound Recording and Reproducing Apparatus. Paul Safranski and King Ross, New York.
- 2,031,809—Camera Mounting. A. G. Zimmerman, assignor to R. C. A.
- 2,031,813—Phonophotographic Apparatus. C. N. Batsel and E. W. Kellogg, assignors to R. C. A.
- 2,031,817—Film Driving Apparatus. A. G. Bradford, assignor to General Electric Co.
- 2,031,832—Portable Talking Motion Picture Apparatus. H. C. Holden, assignor to R. C. A.
- 2,031,835—Recording and Reproducing of Electrical Impulses.
- 2,031,836—Sound and Picture Camera. E. W. Kellogg, assignor to R. C. A.
- 2,031,865—System and Apparatus for Recording and Reproducing Sound. A. A. Thomas, assignor to R. C. A.
- 2,032,116—Motion Picture Apparatus. F. Conrad et al., assignors to Westinghouse Electric Co.
- 2,032,184—Sound Gate. Frank Schiffli, assignor to R. C. A.
- 2,032,200—Method and System for Reproducing Sound from Films. Oscar Chournard, assignor to R. C. A.
- 2,032,213—Photographic Film Magazine. Albert S. Howell, assignor to Bell & Howell Co., Chicago.
- 2,032,336—Motion Picture Film Reel. T. O. Strauss, assignor to Casteel Research Laboratories, New York.

TO THE SOUTH SEAS WITH PILLSBURY

Two new single-reel 16 mm. sound films of the South Seas, photographed and narrated by Arthur C. Pillsbury, well known naturalist and lecturer, are announced by the Bell & Howell Filmsound Library.

"Life in the South Seas" takes us to the Samoan Islands, shows in detail the life of these happy-go-lucky wards of Uncle Sam, and presents marvelous time-lapse photography of the development of the cocoanut plant and the uses to which it is put. The building of the South Sea Islands by two widely differing methods, coral and volcano, is graphically portrayed.

"Life Under the South Seas," the second film, shows undersea diving with water-tight motion picture equipment and the photographic results—utterly fascinating time-lapse pictures of starfish, anemones, barnacles, hydroids, jellyfish, sea pens, sea urchins, and many kinds of fish. Mr. Pillsbury's own voice accompanies these pictures as it has at thousands of popular science lectures throughout the country.



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EASTMAN FILMS



BRULATOUR
SERVICE

Motion Picture Relief Fund of America, Inc.

Interesting Facts for Cameramen

In January, 1933, the Motion Picture Relief Fund fed 2,500 hungry people by supplying grocery orders amounting to \$4,000.

Saved 75 families from being evicted from their homes by paying \$1,000 in rents.

Paid 200 public utility bills amounting to \$900.

Provided medical care in hospitals, sanitariums, drugs, doctors' calls, etc., for 300 patients at a cost of approximately \$3,000.

In addition to this financial aid, we also rendered special service to practically every one of the 800 cases on our books representing about 3,000 people, such as securing studio interviews, making contacts, helping clients to get positions, etc.

All charitable organizations are subject to adverse criticism. Investigation has proven that 99 per cent of this criticism is biased, prejudiced and unfounded. In most cases it is used as a convenient alibi or excuse for not donating to a worthy cause.

May we ask that you give this Fund—WHICH IS YOUR FUND—a break to this extent. When you hear adverse criticism of our activities, before repeating it or accepting it at face value, will you give the Fund an opportunity to defend itself by asking us for the facts?

Among the unfortunate people we are caring for in the motion picture industry, we have the names of carpenters, electricians, housemaids, nurses, mothers' helpers, seamstresses, etc., whom we can recommend if at any time you are in need of such help.

The Motion Picture Relief Fund is a private family welfare agency conducted along private lines to alleviate distress among unfortunate members of the industry.

It has been rumored that applicants for aid who were former contributors to the Fund have been denied assistance. This is positively erroneous. There never has been a contributor, even one who has been found ineligible for aid, whose donation, at least, has not been returned. No hungry person has ever been turned away without help in some shape or form.

We have been obliged to drop cases only be-

cause of our limited funds, but before doing so, the individual or family had been carried along over a period of time in an endeavor to assist applicants to get on their feet.

Each case is considered on its individual merits and we are disbursing our income according to our best judgment in helping the most urgent and worthy cases. Our activities are limited only to the extent of the amount of money you contribute.

During the calendar year 1932, you generously gave the Fund \$155,000 and relief was dispensed to the extent of \$190,000, or \$35,000 more than you gave. The demands continue to be heavy, and the amount of suffering we can alleviate depends entirely on you.

We believe we have an efficiently operated organization and that our overhead is as low, if not lower, than any similar organization in the city. Funds are being disbursed now according to the following policy:

1. To care for illness—preservation of life and health.
2. To lend financial aid for food, shelter and clothing to those persons whose work in pictures has been such as to definitely entitle them to such aid and who are now, through no fault of their own, unemployed. Such aid to be distributed:
 - (a) To married couples with small children.
 - (b) To a woman with dependents.
 - (c) To married couples without families.
 - (d) To single men and single women.
3. To lend such aid in unusual and extraordinary cases as may be deemed advisable when voted upon by the Executive Committee.

If any case of distress of people in the industry come to your attention, before criticizing us, please notify us. We will contact the individual or family and report back to you, keeping you posted on our actions throughout the case.

Disbursements \$1,124,224.20

Dec. 31, 1925-Jan. 1, 1935



MAX FACTOR'S
NEW
Satin Smooth
LIQUID FOUNDATION
A REVELATION IN FACIAL MAKE-UP

William Skall and
His Camera Crew
—a Living Mural
Lighted by the
Magic Lamps of
M-R.



M-R LAMPS TO BE BUILT IN BRITISH PLANT

British-built Mole-Richardson lamps will soon be available to cameramen in the British studios. The Hollywood office of Mole-Richardson, Inc., announces that an affiliated company is being formed in England to manufacture and service Solarspots, H-I-Arcs, and other M-R products, which have come into increasing demand overseas with the recent expansion of British production. British producers have scheduled over a score of features in Technicolor for production during the coming season, and Mole-Richardson Side Arcs, H-I-Arcs, etc., have been pro-

nounced a necessity for Technicolor photography. The incandescent Solarspot lamps are also declared to be creating as much interest abroad as in Hollywood, where they have been called "the perfect photographic light."

Peter Mole, president of Mole-Richardson, is now in London, completing the final details of organizing the English affiliate. With him is Robert Linderman, who lately resigned from the General Electric Company's Hollywood staff to accept the post of Managing Director of the new British enterprise.



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The Evolution of the Motion Picture Story

By EARL THEISEN

Honorary Curator Motion Picture and Theatrical Arts, Los Angeles Museum

PART I.

THE motion picture began as a newsreel. During the early nineties Edison's film stories for his Kinetoscope "Peep-Show" were topical portrayals and performances of noted persons, who had been persuaded to pose for "living pictures." Louis LePrince, William Friese-Greene, and the other experimenters of their time hoped to create a moving picture that they might re-enact or report news events. As far removed as 1878 we find Wordsworth Donisthorpe concerned with the idea. In a letter to the editor of "Nature," which was published in the January 24 issue of that year as "Talking Photographs," he wrote:

"By combining the photograph with the Kinesigraph I will undertake not only to produce talking pictures of Mr. Gladstone, which, with motionless lips and unchanged expression, shall positively recite his latest anti-Turkish speech in his own voice and tone. Not only this, but the life-size photograph itself shall move and gesticulate precisely as he did when making the speech, the words and gestures corresponding as in real life."

That letter expressed the ultimate hope of those who throughout the years made the motion picture a possibility. It was their philosophic dream to bring the image of the great to the masses and to record historic events, that they might be preserved for posterity. It was not until well after 1900 that the dramatic narrative possibilities of the cinema were developed.

Sensational Exploration of Movement

The exploitation of the motion picture began in the Edison "Peep-Show Parlors." The first of these parlors was opened by the Holland Brothers on April 14, 1894, at 1155 Broadway, New York. Here the first movie patrons paid an admission at the door that privileged them to pass down a row of ten or so Kinetoscopes in which they saw the motion pictures by peering through an eye-piece into a trunk-like cabinet. Because it was necessary to "peep" through an aperture to see the new novelty of pictures that moved, the Kinetoscope acquired the popular pseudonym of "Peep-Show." And what a show it was! At the door was a frock-coated "ballyhoo barker" who declaimed the wonders of the new Edison achievement, while inside the fortunate ones who had managed to jockey themselves with the crowd into the place would be eagerly "peeping" at the "living pitchers"—the Edison marvel.

The films were forty or perhaps fifty foot subjects showing such noted persons as Eugene Sandow, the Strong Man; Carmencita, the Dancer; Mae Lucas, the Gaiety Girl from the famous George Edwards'

Girl Show; Annie Oakley, from Buffalo Bill's Wild West Show; Dr. Colton, who invented gas for dentistry, was shown taking out a tooth; and Madame Bertholdi, the contortionist. Also there were bits showing Mexican knife throwers, boxing cats, Texas cowboys throwing lariats, trained dogs and fencing bouts. All these and other items of popular interest were duly recorded to satisfy the demand of the curious who wanted to see the pictures of objects in motion.

Projector Dramatic Device

Within a year there were several experimenters who devised projectors to remove the pictures from the peep boxes and throw them on a screen in life size. The most important of these were Louis and August Lumiere, who had perfected a small, lightweight combination camera and projector. With it they could go to the subject, while other cameras of this period were ponderous, and had to be anchored to a studio floor. Other experimenters contemporary with the Lumieres were primarily scientists, and as such they were concerned with the technical aspects of making pictures move. Fortunately for the interests of the better cinema, the Lumieres had an interest equally important—that was the improvement of what the picture had to say. As a result, their pictures excelled and gave the public something besides just the novelty of pictures in motion. Subsequent to the first public demonstration on March 22, 1895, of the Lumiere Cinematographe, topical pictures from all points were brought to the screen. Wherever there occurred an historic event, there could be found a Cinematographe. The popular approval accorded them served as a vanguard to lead other film producers afield for their pictures.

Starting with 1896, the films reported every major event. At the William McKinley inaugural parade the cameras of E. H. Amat, Biograph, Edison and Lumiere could be seen vying with each other for points of vantage, and after the fashion of newsreelers that has existed ever since, they tried, as a newsreeler would say, "to score a beat" by getting to the screen first with the best picture. Biograph, as a result of its President McKinley picture, enjoyed an extended run at Hammerstein's Olympia Music Hall in New York, dating from October 12, 1896, which, by the way, was the premiere showing of Biograph pictures.

Now comes a transition in motion picture history. The narrative aspects of the McKinley and other pictures of 1896-97 catered to the popular demand that the films say something. They were no longer considered scientific curiosities and the public was no longer willing to pay to see nothing more than pictorial movement which from the first the scientists

had overdone in their eagerness to emphasize their achievement of pictures in motion.

Queen Victoria, Pope Leo, Boer War

Though many years were to pass before narrative plot was used in a screen picture, from this point on the film makers aspired to definite themes and to dramatic forms. The Biograph pictures of this time of Queen Victoria's Jubilee taken in London; the Boer War, taken in Africa; and those of Pope Leo XIII, taken in the Holy See, had incorporated in them a substantial screen value. To facilitate narration, Edison increased the length of his pictures to seventy-five or one hundred feet. The Vitagraph, too, who had started in 1896, showing an Edison Peep-Show, were now making a few comedy films.

The films had by now allied themselves very profitably with the prize-fight fans, who in their enthusiasm for this form of sport furnished much needed capital which served in the interests of extending the motion picture as an industry. This financial impetus helped establish it and it furnished funds for greater efforts at a time when it was, as a literary or theatrical medium, still a foundling. Its profits and spectacularisms at this time brought to it many individuals who promoted the films. The reputation it then acquired has lasted long, although the influences which gave it that reputation have passed into history. That is the story of many arts that have majored in public service, and is a situation that oddly enough is difficult to outgrow.

The first motion picture prize fight was a bout between Michael Leonard and Jack Cushing, which was staged for the motion pictures in July, 1894, at the Edison studio. It came at a time when action was the chief asset and the main interest in a "movie." In that, and in the popularity of the participants, this fight, which was shown in the Peep-Shows, brought to the motion picture many fights in the following years. The fight was arranged by Otway and Gray Latham, and Samuel Tilden, Jr.

To record it, Edison, in collaboration with Enoch Rector, constructed a special camera which would photograph 150 feet of film. This fight was immediately followed by a more pretentious undertaking between James Corbett, then the heavyweight champion, and Pete Courtney. Until 1912, practically every fistic event was duly recorded. On July 31, 1912, the Sims Bill, which made interstate traffic in films unlawful, was passed by the United States Congress. The prize fight picture played no important part in the history of the European industry.

II.

NARRATIVE PICTURES

It is difficult to ascertain just when the first narrative motion picture was made.

There were story films as early as 1895. An example of this is the "L'Arroseur Arrose" or "The Sprinkler Sprinkled," made by the Lumieres, which showed the naughty boy kinking the garden hose, and the climax came when the gardener looked into the end of the hose. Edison made comics of a similar nature, as "In a Chinese Laundry."

Among the more elaborate pictures of this time was "The Oberammergau Passion Play," made in New York by Rich G. Hollaman, president of the Eden Musee, and Albert G. Eaves. It was completed in January, 1898, in a length of 2,100 feet, and was sold to individuals who road-showed it through the United States. This was by far the most pretentious picture yet made, and for the first time much favorable attention was directed toward the motion picture as a dramatic medium. Several versions of

"The Passion Play," made by others, followed it on the screen. Another picture, "The Life of an American Fireman," is generally credited with being the first of the story-telling films. In it was incorporated a definite plot, and for the first time such dramatic devices as parallel action and cut-backs were used. And for the first time the hero—the fireman with galloping horses and smoke-spouting fire wagon—arrived just in time.

With the making of the "Great Train Robbery," in the fall of 1903, motion picture history really began. Its 740 feet of film carried to the farthest corners of the world a story that had a particular appeal to the movie patrons of that time. It was considered the "ne plus ultra" and as such was used as a pattern by the picture producers during the nickelodeon period of pictures. Its simple plot, of the short story type, almost totally lacked characterization, but instead relied upon action for its appeal. There was the gun fire, mad movement, horses, and the hero element that was then thought to be the desired ingredient for the super-production. For the most part, this action type of plot was used until the motion picture industry availed itself of a star, or celebrity system, in 1910-12. "The Great Train Robbery" was remarkably like the present-day Westerns.

The story was written, directed and photographed by Edwin S. Porter, who, in 1912 was associated with Adolph Zukor and Daniel Frohman in the formation of Famous Players. In the cast were Frank Hana-way, a stunt rider in the United States Cavalry; George Barnes, a performer at Huber's Wax Museum in New York. (Barnes is the one who caps the climax by pointing a menacing gun, William S. Hart fashion, into the eye of the audience, and in that way the picture ends.) Max Aronson, later to become known as "Broncho Billy" Anderson, was in the cast, as well as Marie Murray, the "Phoebe Snow Girl" of the Lackawanna Railroad publicity campaigns.

The popularity of "The Great Train Robbery" is
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GOLDEN GATE NEWSREELERS HIT THE DECK

Left to right: Jack McHenry, Universal; Joe Rucker, Paramount; Eric Mayell, Fox Movietone; George



Lyng, Hearst Metrotone; Frank Vail, Pathe; Nigger, the dog and Paul Heise, Fox Soundman, seated.

Clad in all regulation marine safety devices the news-hounds sail forth on a treasure hunt story. Came a narrow escape from a watery grave, when the good ship, "Albertine," ran afoul of a reef. After waiting hours and hoisting distress signals to lure some help—it was discovered that the tide had gone out and all hands were able to walk ashore—minus the life belts.

AMATEUR MOTION PICTURE SECTION

HAMILTON RIDDEL, EDITOR



Tinting Home Movies

—How New Beauty Can Be Added to the Black and White Films—

By

F. HAMILTON
RIDDEL

LONG recognized by professionals as a pleasing asset of the motion picture screen, tinted film is likewise worthy of attention by amateur movie makers. And once having witnessed the satisfying results obtained by a tinted print on the home screen, movie makers are made all too aware of one fact: In many instances, ordinary black and white films leave something to be desired. However, new beauty can be added, even now, to one's plain black and white subjects—thanks to color-tinting. Nor is this coloring of film, by tinting, "too technical" or "complicated."

While it is not the purpose of the present article to encompass an exhaustive discussion of tinting methods, it does seek, rather, to point out the possibilities of tinted home movies. Procedure in tinting films, of course, will be dictated by the personal tastes of individual movie makers. And a reasonable mixture of imagination and care will yield worthwhile results.

Tinted film is the type which gives the screen a single, over-all color or tint. For example, movies in pink, or green, or amber shades. The base of tinted film stock is colored, not the photographic image itself.

Before the birth of the talkies, tinted film was extremely popular on the professional movie screen. For it built up certain "moods" and greater realism, in dramatic pictures; and added untold beauty to the screen travel short subjects. With the advent of sound-on-film, however, due to the exigencies of sound reproduction, this means of coloring film was dropped. "Cold," black and white shadows ruled the screen for some time. But tinted film eventually returned, more delicately tinted, to be sure, but none the less welcome. So it is that tinted film has continued with all its pleasing effects.

Various tints may be used in coloring personal movies, the following list being merely suggestive:

Amber—Air scenes; landscapes; for general subjects, both interiors and exteriors.

Blue—Night scenes; moonlight and snow.

Green—Water scenes; forest and woods; fields and gardens; and in some cases for "gruesome" effects.

Lavender—Late evening; early morning; and hunting scenes.

Pink—Scenes of babies; children; general sub-

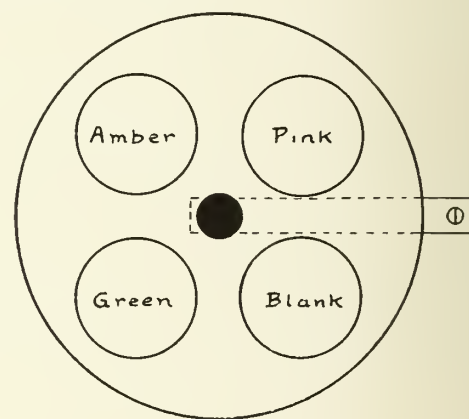
jects; fireside interiors; sunsets; burning buildings or explosions.

Red—Fire scenes; explosions; special effects.

Yellow—Brilliant sunshine scenes; at the beach or on the desert.

In making a decision of what tints to use, it is advisable to bear in mind that the lighter hues will give greater screen illumination. Darker tints, such as red, should be used sparingly. Selection of tints will therefore depend to some extent upon the power of your projector lamp.

One should next decide whether an entire roll of film is to have color imparted to it, or only certain sequences. Generally speaking, for the sake of variety (that quality which should be striven for) it is preferable to tint each distinct sequence differently. Single subject reels, on the other hand, are more readily adapted to a single tint; such as light amber or pink. In more remote cases, only individual scenes might contain color.



COLOR WHEEL

Wheel Diameter = $4\frac{3}{8}$ "

Color Holes = $1\frac{1}{4}$ "

7R

Tinting may be accomplished with any size or type of amateur motion picture film, although the method will vary according to the type of film being tinted.

Familiar reversal film stock, being a single-film process (camera and projector film being one and the same) will require its base being dyed, after regular processing, in order to impart the desired color tint. Film laboratories can do this work, or if desired it may be done at home. In the latter case, simple tinting preparations are available together with instructions for use.

Users of negative-positive, which is a two-film process, have somewhat the advantage over single-

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Right Off the Reel Questions and Answers

By F. HAMILTON RIDDEL

SPRING Cleaning: About this time of year, with spring in the air and summer not far off, your camera is due for a cleaning. The next six months will mean a busy period of movie making, so take time off now and check over your camera. This will include cleaning lenses, oiling, checking proper speed, checking the take-up reel belt, and cleaning the camera's aperture plate.

Natural Curl: When splicing frosted leaders onto a reel of film, take advantage of the natural curl of the film base. Make a splice so that each section fits this natural curl of the other. Such splices will be stronger and will last longer.

Dull Base: The section of film which fits over the scraped lap of a splice is the base (shiny) side. A splice will be stronger if you will "dull" this shiny side with a common typewriter eraser. By so doing, the "dulling" process is accomplished in a neat manner.

Identifying Reels and Cans: To label 400-foot reels and cans, for identification purposes, secure some half-inch adhesive tape. This tape adheres quickly and conveniently to the polished surface of the reels and cans. By placing a small strip of tape on a typewriter roller, the reel number and subject may be easily typed onto the tape. Make two such labels—one for the reel itself, the other for the can. Be sure to affix the label for the can on the side of the can, for then it is easily seen when several cans are stacked together. Using adhesive tape as a label has a distinct advantage for, should it ever become necessary to re-classify reels and cans, the tape can be very conveniently removed.

Scenes Lengths: Most scenes of a personal motion picture film should not last longer than ten seconds on the screen, or about four feet of 16 mm. film. This is a good rule to remember when photographing. Many scenes are improved if they are reduced to five or eight seconds. Have a good sense of what is interesting and you'll never project a picture that is jerky, because of scant footage; nor a boring one, due to excess film footage.

Getting Ready for Summer: It doesn't seem too soon to mention summer and color. Those less fortunate amateur cinematographers who do not have the opportunity of enjoying fair southern climes the year 'round perhaps appreciate better that summer and color are synonymous. With this thought in mind and if you have not yet made an initial trial of the natural color 16 mm. films—Dufaycolor and Kodachrome—the spring months offer a forerunner of summer's colorful subjects. So load up your camera with a roll of color film and sally forth. Make this first roll a test—both of the film and of your own ability to choose good color subjects. Follow the film manufacturer's exposure instructions and keep notes on your individual exposures and lighting conditions. Thus, when the color film has been processed, study carefully the results on the

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In the *International Photographer* for February, 1936, a mistake was made in the answer to Question No. 7. The correct answer is that the Eastman Kodak Company has been making duplicates of 8 mm. film for more than a year.

1. What is meant by the various terms, anti-halation or grayback, in speaking of such films?

Each film manufacturer has its own particular term for such films. A special coating on the back of the film base minimizes the danger of halation (reflections) when photographing, thus rendering a more pleasing image.

2. What is meant by "grain" in a cinefilm?

In any film the picture image is composed of small clumps of silver which are embedded in the gelatine emulsion, coated on the film base. These small clumps of silver are the "grain."

3. What is the difference in the amount of perceptible "grain" in fast film and slow film emulsions?

Speed film emulsions are necessarily somewhat more "grainy" than slower film stocks. However, the problem of "large grain, fast film versus small grain, slow film" has been well met by modern film manufacture. In addition to improved film manufacture, proper processing in special "fine-grain" developers has minimized the effect of any perceptible grain in the fast films.

4. May a camera be hand-held when using a telephoto lens?

Conservatively speaking, a camera with a two-inch lens may be held in the hands. Experience has demonstrated, however, that far better results are obtained in telephoto work when a tripod is used. A somewhat faster camera speed also helps. And of course, with longer focal length telephoto lenses, a tripod is an absolute requirement for successful long distance shots.

5. Occasionally one of my rolls of film turns out a complete loss. The frames are a blurred streak (a sort of multiple image) and are unsteady, etc. What is the cause?

No doubt the condition of such rolls is the result of losing the proper film loops in the camera. As is well known, there is a combination film movement in a movie camera, continuous and intermittent, and the film loops bridge the gap between the two. When these loops are lost the film moves continuously past the lens aperture, thus ruining your pictures. Lost film loops are either the result of hurried and careless threading; or less frequently by a partially exposed film which having become "set" by lapse of time, loses loops when filming is resumed. Usually, when loops are lost, the camera mechanism will jam or labor, and thus warns you that something is wrong. Unfortunately, this is not always true of all cameras and an entire roll may be spoiled. Very careful threading of the camera is the best insurance against lost loop trouble.

6. Does tinted positive film cost more than plain black and white?

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LENS APERTURES VERSUS PRINTER POINTS

(Continued from Page 10)

was. The drop to the 100 and 150 mm. lenses without a corresponding increase in exposure or added lighting contrast to the scene gives flat underexposed negatives incapable of being improved with forced development. Here, considering the low working key of F:12 the remedy for the 75 and 100 mms. would be a three-quarter stop increase in exposure while the 150 mm. at F:63 would give it the desired density allowing latitude in developing either side of normal, producing a negative with satisfactory gradations and brilliancy, printing in the upper register of the printer.

A further point to be considered in the use of long focal length lenses is the removal by proper filters of the luminous haze that affects the sensitive film adversely when not so corrected.

This haze, a resultant of fine moisture particles in the atmosphere, produces a scattering effect in the violet and ultra-violet regions causing a diffusion of the light which upon reaching the more sensitive film (in comparison with the vision) causes a spreading ground-glass effect, making a flat over-accentuated condition quite different from the **actual** scene as the vision perceived it. Filters not too sharp cutting should be employed here giving normal correction, as deep sharp cutting filters tend to over correctedness, again giving an effect not normal.

Correct lens shades should be given consideration also, due to the narrow angle of the telephoto and the greater scattering of light within the camera causing slight fog that further increases the flatness.

In another series of tests with a slightly lower light intensity the same result with certain modifications was brought out with the 25 mm., 50 mm. and 100 mm. lenses shot with the doubled stops from F:18 to F:2.3.

F:9 was found to be here the desirable exposure for normal daylight (exteriors) under the laboratory processing conditions at hand. This gave latitude either way in development, enabling control over the density-contrast of the scene which if too high, could be lowered with decreased development, still giving a positive within the desired range yet retaining normal brilliancy and gradation.

A further definite result was obtained: The approximate ratio in printer points between the various lens stops which for all practical purposes was fairly consistent. This showed, as in the previous test, the gradual reduction in density and brilliancy of the longer lens though this was not as extreme where the exposure was near normal, as when decidedly under.

As the results for the different lenses retained the same ratio toward themselves and each other, only the scale of the 50 mm. is here given. The printing scale is that ranging from point 1 to 22, it still being the predominating scale in use.

The readings above 22 are given and accurate enough for a guide, but are almost useless except as a criterion for the kind of exposure **not to get**, as a negative printing that high except in exceptional cases of lighting or flatness is far from desirable, the fine half-tones and modeling of the lights being opaqued to the extreme, thus undoing all the cameraman strove for.

Lens	Aperture	Printing Light
50 mm.	F:18	7
50 mm.	F:12	10
50 mm.	F:9	15
50 mm.	F:6.3	20
50 mm.	F:4.5	25
50 mm.	F:3.2	32
50 mm.	F:2.3	38

It will be observed that between the lowest two apertures where the under-exposure is pronounced the variation is only three printer points and too low on the scale. At F:9 it prints on light 15, has fine quality and capable of being "juggled" either way to its benefit if necessary and is a good basic exposure for normal exterior sunlight.

Then with the various increases and doubling of the apertures it prints on 20, 25, 32 and 38 showing that F:6.3 is at the extreme top of the scale except where hazy flat conditions have prevailed; that F:4.5 is outside the printing range and the two higher stops valueless, save when lights are bad and heavy filters employed.

As stated before, the inherent flatness still persists in the longer lenses, though there is a faint dropping off at the higher printing points that could be beneficial (due to the flatness of the lens and haze) counteracting the great build in density.


The ratios of printer points to lens apertures remain fairly constant, however, with about a three point difference at F:12, jumping five points for the F:9, 6.3 and 4.5, then increasing to six to eight points as the scale is exceeded and over-exposure carried beyond the extreme.

While these readings are not absolute, depending on differing processing conditions (both negative and positive) and slight variations in vision between various individuals, they do contribute somewhat as an aid in correcting and guiding where the cameraman is in doubt.

They do establish that where exposure is lean with the 25 and 50 mm. lenses, the longer focal lengths will be below the minimum at the same exposure, therefore an exposure increase varying from a half a stop to one and a half is essential to produce a good negative.

That where exposure is more normal this variation decreases slightly, yet persistent enough to demand attention and correction.

(Turn to Page 22)



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EASTMAN *SUPER X*
PANCHROMATIC NEGATIVE

LENS APERTURES VERSUS PRINTER POINTS

(Continued from Page 20)

That the telephoto lens demands careful filter correction and proper shading in the way of a lens hood, to overcome the flatness due to the greater glass separation, magnification and atmospheric haze that is so pronounced with greater distances.

They give a guide if carefully tabulated as to the relative differences in printer points of the various lens apertures in relation to themselves and in relation to the scale on the printing machine.

Finally, they show the limits to which under-exposure can be carried and still be "forced" in development to obtain a passable negative; and the limits of over-exposure consistent with good negative quality and printing density. And they do assure the elimination of both extremes, thus setting a minimum and maximum range conducive to the benefit of both the cameraman and the laboratory.

EVOLUTION OF THE MOTION PICTURE STORY

(Continued from Page 17)

attested to by the fact that it has never entirely left the screen since its first night at Hammerstein's. It did not arrive in Australia until 1910, and a few years ago it was synchronized to a sound track. Statisticians may some day conjecture the number in billions of persons who saw that picture.

III

NICKELODEON PICTURES

The motion pictures of the period of 1900 to 1910 may be divided into three general classes. There were the topical pictures that later evolved to the newsreel; the action pictures that relied upon a fast-moving plot; and the melodrama with a broad attempt at characterization.

The melodrama had its inception largely with the French pictures, particularly those of Pathe. They first became popular about 1905, at which time they spread to other countries. For many years the French pictures of this type were unsurpassed in quality; that is, judging by the accepted standards of the day.

In the "melterdramer," as they were known, the players were required to exaggerate their gestures, and to overact in an attempt to convey the story, because the explanatory title had not yet come into use. For purposes of emphasis and dramatization, various stock postures were used by the players to signify ideas. For instance, indifference was expressed by two or three large shoulder shrugs; indignity and disdain were implied by one of those drawn-up poses, with one arm akimbo, while looking down the nose; rage was expressed by holding the arms aloft while pumping them up and down, or by pulling the hair. Villainy was conveyed by leaning forward and elaborately looking about with rolling eyes.

The heroine always covered her face and tearfully heaved her shoulders after the villainous insult. The hero usually reproved the villain by shaking his finger at him. The badge of the villain was a long moustache, while the hero could be told by his handsome features and faultless coiffure. Some heroes affected nicely curled eyelashes.

The melodramas were slow moving and importance was placed in characterization. The action picture, in contrast, stressed movement, and in it the player was not permitted a moment of idleness. Usually there was a chase. It started, perhaps, by the bad boy stealing an apple from a vendor who immediately tried to catch him. In a block there would be a dozen persons in pursuit. At other times the villain would be pursued by the sheriff and an inordinately large posse. Very often during the filming of one of these pictures the director could be heard shrieking, "Faster—keep moving."

In both classes the story was brief and condensed. In the majority of pictures the narration

and continuity were so poorly arranged that affluent theaters found it necessary to have a "spieler" who stood by the side of the screen and improved on the pictures with apropos comments and explanations. The photography was, at times, of such poor quality that it was impossible to decide what the picture was supposed to represent.

At first the motion pictures were shown in vacant stores which were equipped with folding chairs. In the provincial districts the films were carried by itinerant showmen and were exhibited in carnival tents between the acts. The tents were made of black canvas, in order to darken them sufficiently for showing the pictures. They were about twenty by forty feet in size, and as many as one hundred folding chairs were crowded into this space. Very often they were so crowded the film from the projectors unwound in the spectators' laps. Since that was before the projectors had take-up arrangements for

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the film, it unwound from the projector into baskets.

The poorer showmen had a "center-pole tent," that is, one that had a pole in the center for supporting the tent. The affluent ones proudly used the newer type tent, the "split-pole." In this tent the projector could be set in the center with no interference from a pole. The projectors sat on shoulder-high platforms until about 1906, when specially designed showhouses made their appearance. Outside the tent entrance, as was practiced at the "peep-show parlors," a "barker" proclaimed and exhorted the passers-by to see the "living pictures." Also, they resorted to attracting attention by the use of phonographs. These phonographs had large horns six feet long and three feet wide. Their cylindrical records, three or four inches in diameter, could be heard a block away. In some of the larger cities the films were booked on circuits as part of a vaudeville program.

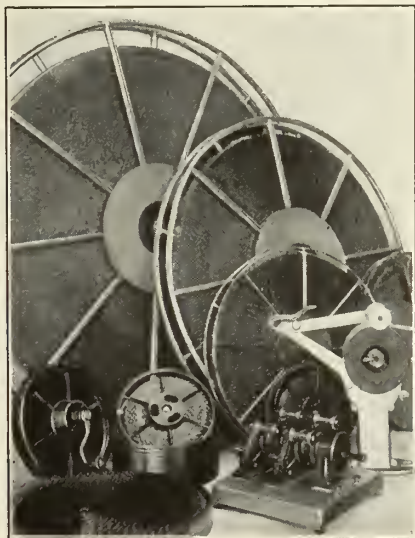
Between the pictures, particularly those shown in the vacant stores, or provincial town "opera-house," a series of slides of the song hits of the day were projected, accompanied by a rather worn piano down front. The numbers, such as "Love Me and the World Is Mine," and the more sentimental songs were popular. During this intermission a vendor noisily sold candy up and down the aisle.

END OF PART ONE.

TINTING THE HOME MOVIES

(Continued from Page 18)

film reversible stock. For, in this case, tinted positive stock is available for making prints from the negative. This tinted positive stock is offered in



various colors, with the tints inherent in the base. Thus an even, delicate tint is easily obtained by using tinted positive when making prints. Tinted positive is developed in the same manner as plain black and white, no additional processing steps being necessary.

For those movie makers who, whether they use reversal or negative-positive film systems, do not care to delve into the respective methods for tinting their particular stock, one of the simplest alternative tinting devices is the color wheel.

The color wheel is quickly attached to any home projector. Any film—already tinted or black and white—of any size, may be used with the color wheel. It also has an extra advantage not obtainable by any other method of tinting film. At the will of the projectionist, movies may be shown on the screen either in plain black and white, or in tints.

The drawing accompanying this article shows a simple and inexpensive home-made color wheel, dimensioned to fit the average home projector. The device consists of two circular pieces of heavy cardboard, with four color holes (apertures) cut into them. A selection of colored gelatines—in this case amber, pink and green—are "sandwiched" between the two pieces of cardboard, the latter being glued together. One aperture is purposely left blank; this, for projecting plain black and white, or Dufaycolor and Kodachrome natural color, films. After the two pieces of cardboard are glued together, the neatness of the job is enhanced by application of linen mending tape to the circumference of the color wheel. The color wheel is then pivoted on a small metal bracket, the latter being attached to the front of the projector. The color wheel must be mounted so that the four color apertures will revolve, in turret fashion, in front of the projection lens.

With a little practice in manipulating the color wheel, scenes may be variously tinted to suit the personal taste of the operator. Should a cue be necessary, a small pin-hole may be punched into several concluding frames of a sequence. Two or three frames so punctured are sufficient. The pin-hole should be made at the upper right-hand corner of the frames. This signal, or cue, in use, is identical to the "change-over" in the professional field. While the pin-holes appear only momentarily on the screen, such a cue gives the home-movie operator warning—and time—to change the color wheel's aperture to any other desired tint selection.

Color-tinting films is another phase of amateur movie making that will enhance your movies, and which will win praise from your home-movie audiences. It is well worth a trial.

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COLOR STUFF

With the advent of color we are beset with many "firsts," if you know what that means. For instance Edward T. Estabrook shot the first feature color picture with sound.

When the rush for color came in 1928-29 he was head of the camera department for Technicolor and held the big job for several years. He was first to train a class in color cinematography.

During the past year Mr. Estabrook has been employed at Universal. "The Red Skin," "Song of the West" and "Fifty Million Frenchmen" were some of his color pictures.

RIGHT OFF THE REEL*(Continued from Page 19)*

screen. Through this experience, you will be better prepared to shoot scenes in full natural lifelike color when summer rolls around, and get results that will bring everlasting satisfaction.

"Cine-Kodak News": Devoted to the interests of amateur motion pictures, "Cine-Kodak News" is an attractive periodical published bi-monthly by the Eastman Kodak Company. Each issue of the "Cine-Kodak News" contains concise hints and many illustrations that are of interest to all 8 mm. and 16 mm. filmers; together with current announcements of new Eastman amateur cinematographic equipment. Movie-makers may obtain a copy of the "Cine-Kodak News" by addressing the Eastman Kodak Company at Rochester, N. Y.

WANDERING WITH THE LEICA*(Continued from Page 3)*

negatives and the result was that we all spent three hours tying different colored threads through the perforations indicating the number of prints desired. I should have liked to have been in the darkroom when the Japanese printer was trying to decide whether a piece of thread was pink or gray, under the red light.

Developing and Printing

The developing and printing done in the Orient is excellent, if it is done in an accredited place. I took my work to the Leitz dealers and the results were good and inexpensive. It is very costly to buy supplies in the Orient, though, and enough film should be taken along for the entire trip. In China the firms do not carry long rolls, and only single loads are available.

Custom Officers Courteous

Upon entering Japan there was a little difficulty with the customs, but they were very courteous and merely inspected my exposed film rolls. In China there was no trouble on entering and the camera can be used everywhere. The Japanese rules on photography are easily ascertained and, if one will be careful to ask when in doubt, trouble can be avoided. Even if one does make a mistake and is taken into custody, as a friend of mine was, he is given courteous treatment and the experience really becomes an interesting one.

Great Field for Photographers

There are enough intriguing subjects in the Orient to warrant careful choosing on the part of the photographer and the use of all the devices he can evolve to take pictures unobserved will prove valuable. Some of wrinkled old faces, the eager ones and the beautiful geisha faces can be caught only if the subject is unaware that the camera is pointed at him. Therefore my advice to all enthusiasts is to come well prepared with plenty of his favorite film, a good meter for use in the smaller streets and inside shrines and buildings, a right angle view finder, and his trip to the Orient will remain with him always on his film record.

International Photographer

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In the United States

NEW NATURAL COLOR CAMERA HAILED**By KARL A. BARLEBEN, JR., F.R.P.S.**

THE MIKUT Color System is here! With America eager for the latest advances in color photography, the Mikut outfit is hailed the outstanding system by authorities.

Already a number of leading newspapers and syndicates have purchased one or more complete Mikut units, and the time is not far off when you will be greeted by natural color pictures in your daily newspapers and favorite magazines. Indeed, already some papers have started to print special color sections, the pictures made with the Mikut camera.

The Mikut camera is a one-shot color camera producing three negatives simultaneously on a single plate, each negative measuring 4x4 cm. Its dimensions are 3¾x4x6 inches; weight, 3 pounds; lens, fully corrected Mikutar; shutter, latest model Compur. A built-in range finder assures complete freedom from out-of-focus pictures.

Of great interest is the projector which is used for projecting color pictures upon a screen and also for making direct enlargements. It is easily portable, uses high-intensity, low-voltage lamps, does not generate excessive heat, requires no experience, and is absolutely safe.

The Mikut Color System, employing the camera, projector, and various accessories, is not only for the press, but for professional color photographers and amateurs, too. Many of the leading specialists in natural color photography for advertisements and illustrations are now using it. The precision, simplicity and accomplishments of the Mikut make it the ideal color system for amateur use. Its flexibility makes it the ideal amateur and all-purpose color outfit.

Color photography has suddenly forged ahead by leaps and bounds during the past year, and the Mikut comes just in the nick of time as the answer to a complete outfit which will accommodate the various variations of color. Methods for color photography have come and gone, but somehow we feel that the Mikut system will remain because it is fundamentally sound in principle and operation. When the press takes up something as enthusiastically as it has taken up the Mikut outfit, you can rest assured that it is "the goods." You will see and hear more about the Mikut as time goes on. In the meantime, if you are interested in the production of natural color pictures, either for projection or for prints, or both, write for descriptive literature. Start the summer right by using more color pictures.

The sales rights for the United States are handled by the Photo Marketing Corp., 152 West 42nd Street, New York City. Amateurs, institutions of learning, museums and others may direct their inquiries to this firm. Professional and news photography sales are accommodated by the Raygram Corporation, 425 Fourth Avenue, New York City.

QUESTIONS AND ANSWERS*(Continued from Page 19)*

No. All amateur-size positive, plain or tinted, is the same price.

NOTE: As a service to amateur movie makers, we extend a cordial invitation to write in questions which will be replied to in this department. Address all such letters to:

Questions and Answers Department,
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The Archaeology of the Motion Picture

By EARL THEISEN

(Continued from Feb., '36)

In the meantime Thomas A. Edison had assigned his co-worker, William Kennedy Laurie-Dickson, to the problem of the motion picture. During 1887 their experiments and devices were patterned after the principle of the early cylinder phonograph. This line of experiments was proved impractical and was followed by other methods that utilized, besides the available photographic mediums, long sensitized paper bands. The trend of the experiments was altered when Laurie-Dickson attended a lecture at the New York Camera Club, at which time he saw the first of the Eastman Celluloid Film demonstrated. When Edison saw a sample he told Dickson in his characteristic manner: "That's it, now work like hell!"

Laurie-Dickson completed a rough copy of the Kinetoscope which was ready for demonstration on Edison's return from Paris in 1889. This demonstration is said to have been held on October 6, 1889. In the files of the Eastman Kodak Company is the record of the first order of motion picture film that was used in this demonstration. It is dated September 2, 1889, and is for the sum of \$2.50, to cover the charges for a roll of Kodak film.²⁰

Edison applied for a U. S. patent on August 24, 1891, which was granted August 31, 1897, as No. 589,168. The device it covered, "The Kinetoscope," was first shown commercially April 14, 1894. Though it was a "Peep-Show" (the pictures were seen by looking in an eyepiece) it used film of the same width, sprockets and perforations and embodied general principle still in use today and which made possible and crystallized the motion picture vogue throughout the world. Due to the popularity of the Living Pictures of Edison, several endeavored to make devices to project pictures in motion to a screen as was accomplished with the magic lantern.

Louis and August Lumiere were granted a French Patent on February 13, 1895, on a projector, and their first public demonstration was held on March 22 of this same year. The "Cinematographe," as they called their device, was a camera, printer and projector combined, and due to its mobility and compactness it could be carried to the subject or event which as a result made the Cinematographe something of a popular reporter from the very first, while the contemporary equipment of others was too bulky and heavy to be easily moved.

Others to project pictures this same year were Woodville Latham, who had a press showing in New York of his Pantopticon on April 26, and Thomas Armat and C. F. Jenkins in Washington, who collaborated to make a projector which was shown in August, 1895. It had a beater movement which was not successful. At this time another projector with a Geneva Star Movement was started and was successfully finished independently by Armat, the rights and patents of it being acquired from Armat by Edison, who manufactured it commercially as the Vitascope. The Vitascope was made and sold by Edison, who at the same time continued making his Kinetoscope Peep-Shows. In England, Robert Paul and Birt Acres completed a projector with a Geneva Movement in the fall of this same year. In Germany, Oscar Messter demonstrated a projector in 1896.

The ancients had struggled with chisel and stone from which evolved the printer's ink and paper, canvas and paint as a means of recreating events. Now

the scientists brought into being a new medium of expression, the celluloid and silver. They had successfully completed their task of animating pictures and in so doing created an international language.

They took the young motion picture, in the year 1895, to the doorsteps of the artists and left it there to be taught to speak and to educate it in dramatic art.

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- ²La Grande Encyclopedia, 1902, Vol. 25, pp. 377-378.
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- ⁴This is evidently a reference to Ptolemy's "Optics," written about 130 A.D., of which two copies are known to exist, one in Bibliothque Nationale, Paris, and the other in the Bodleian Library, Oxford. In this manuscript is a description of the phenomena of spinning colored wheels.
- ⁵Histoire du Cinematographe, G. H. Coissac, pub. Gauthier-Villars, Paris, 1925.
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- ⁸"Puppets, Ancient and Modern," Francis J. Ziegler, Harper's New Monthly, Vol. 96, 1896, p. 85.
- ⁹"Explanation of an Optical Deception in the Appearance of the Spokes of Wheel Seen Through Vertical Apertures," P. M. Roget, Phil. Trans. Royal Society, 115, 1825, pp. 131-140.
- ¹⁰"Living Pictures," Hopwood and Foster, 2nd edition, Hatton Press, London, 1915, pp. 5, 8. (This book first published in 1899 contains a good survey of the early pre-screen cinematic devices.)
- ¹¹"On a Peculiar Class of Optical Deception," Michael Faraday, J. Royal Institution, 1, (New Series), 1831, p. 205.
- ¹²"Lettre sur une Illusion d'Optique," J. A. F. Plateau (Ann. de Chimie et de Phys.) (2) XLVIII, 1831, p. 281.
- ¹³J. Soc. Motion Picture Engineers, vol. XX, No. 3, March, 1933; p. 249 for a chronological survey of devices by Earl Theisen.
- ¹⁴A list of the more notable devices would include: Plateau's Anorthoscope, 1836 (dealing with the theory of Faraday's Wheel), also Plateau's Phantasmascop, 1834; Stampfer's Kaleidorama or Phantascop, 1835 (similar to Plateau's Phenakistoscope); Wenham's Kinetoscope, 1852 (Edison chose this name for his apparatus); besides Plateau, Poppe, Savart and Muller each made a Stroboscope; Rose's Kalotrope, 1856; Langlois and Angier's Kinescope and Photoscope, 1868; Linnett's Kineograph, 1868 (animated pictures in book form); Laing's Motograph, 1865, besides Beale in 1866, Brown, 1869, and Hughes, 1884, invented Choreutoscopes; Topler and Radau, Vibroscope, 1867, Variations of the "Wheel of Life" were made by Clerk-Maxwell, 1869, and Ross, 1871; there are about fifty others who varied the principle of the Wheel of Life and then called their devices by another name; Messonier Zoopraxoscope, 1877, Donisthorpe, Kinesetograph, 1878; Reynaud, besides the Prazinoscope, 1877, devices the Theatriaxinoscope or La Toupee-fantoche, in 1889; Marey, assisted by Demeny, Chronograph (which was known in 1893 as Photochronographie, or Chronomatograph), 1882; and Ottomar Ancheutz, Tachyscope, 1889.
- ¹⁵A further list of the names of devices prior to the advent of the screen include (as taken from page 24, "Animated Pictures," C. F. Jenkins, pub. C. F. Jenkins, Washington, D. C., 1898), Criterioscope, Wondorscope, Cosmoscope, Anarithmoscope, Panoramograph, Katoptikum, Zooptotrope, Cinograph, Hypnoscope, Centograph, X-ograph, Electroscope, Cinagraphoscope, Craboscope, Viletoscope, Cinematoscope, Mutoscope, Animaloscope, Kineatograph, Rayoscope, Motiscope, Kinotigraph, Venetrope, Vitrescope, Zinematograph, Vitopticon, Stinnetiscope, Daramiscope, Lobsterscope, Corminograph, Scenamotograph, Pictorialograph, Kinegraphoscope, Vileograph, Kinevitograph, Mophotoscope, Movementoscope, Touniatoscope, Vilophotoscope, Waterscope, Visionoscope, Phonendoscope, Heliographoscope, Pantobiograph, Chronophotographoscope, Vileocicgraphoscope, Pantomingraph, Ammotiscope, Acheograph, Lifeoscope, Sygmographoscope, Cieroscope, Stereoptigraph, Eragraph, Moto-Photoscope, Thropograph, Mimicoscope, Musculariscope, Involgraph, Shadographoscope, Counterfivoscope, Realiphotoscope, Salfseminograph, Getthemoneygraph, Parlorgraph, Klondikoscope, Scenoscope, Tropograph.
- ¹⁶This intermittent was a variation of the present Geneva Cross or "star and pin" movement.

(Turn to Page 30)

Production Use Tested the "Ultra H. I. Arc"

By ELMER C. RICHARDSON,
(Mole-Richardson, Inc.)



It is not often that a new piece of cinetechanical equipment can be proven by actual use on an important production before its introduction to the industry. Yet the ultimate proof of equipment is its practical utilization; a single day's work on the set can often reveal flaws which pass undetected through the most exhaustive of laboratory tests.

The Mole-Richardson "Ultra H. I. Arc" spotlight, which makes its formal bow to the industry this month, is one of the few devices which has had the advantage of being previewed on actual production. One of a series of new arc lighting units designed and built especially to

meet the requirements of Technicolor's three-color process, the "Ultra H. I. Arc" emerged from the laboratory-test stage of its development just as Cinematographer William Skall, photographing Pioneer Productions' "Dancing Pirate," needed a battery of high-power arc spotlamps to illuminate a sequence of important dance numbers on an unusually large set. The new lamps went to work immediately; and so successful did they prove that instead of returning to the factory for further testing or modification, they stayed on with Skall to finish the picture. The announcement of the new lamps has, in fact, been withheld until the completion of the production proved beyond doubt that no slightest change was necessary to make them, to arc lighting, what the "Solarspot" has been to the incandescent field.

The "Ultra H. I. Arc" is a 150 ampere, high intensity rotary carbon arc spotlight. Scarcely half the size of a conventional 36-inch Sun Arc, the new lamp, at normal working beam-spreads, considerably exceeds the "36" in power. As it is fitted with a "Morinc" lens of the same type as the one used on the "Solarspot," the light is distributed with almost perfect uniformity at all beam-spreads from the tightest spot-beam to a maximum flooded spread of 48 degrees. A newly designed carbon-feeding mechanism gives an unequalled steadiness of burn-

ing, and special carbons give a light considerably whiter than is usual in high-intensity arcs.

The design and performance of the "Morinc" lens is familiar to every "Solarspot" user. With this type of optics, it is not only possible to use a faster lens, of shorter focal length, thereby collecting the light more efficiently, but to give each individual zone of the lens the curvature best suited to the work assigned to it. Thus it is possible to overcome both the inherent inefficiency of conventional condensing-lens spotlights, and the optical aberrations which produce dark centers in the flooded beams of conventional reflecting spotlights. The use of this type of optical system to collect the light from a high intensity arc eliminates the objectionable element-shadows seen in most mirror-arc spotlights, since the elements supporting the carbons cannot cast their shadows into the beam.

In designing the carbon-feeding mechanism, two important ends were sought: Silent operation, and steady burning. The use of silent gearing in the carbon-feeding drive has silenced the mechanism of the "Ultra H. I. Arc" to a point where both laboratory tests by recording engineers, and practical use on the set have proved that the lamp can be used, with the feed operating, within ten feet of the microphone.

Steady burning is achieved by careful attention to detail in the design and operation of the carbon feed. In a high intensity arc, the major portion of the light comes from a glowing ball of incandescent gas which forms in the crater of the positive carbon. If the positive crater is not symmetrical, this gas-ball will waver, and the light will be unsteady. Research into this crater-formation showed that regardless of the carbons used, or electrical safeguards employed, if the carbon rotated too slowly, the crater could not be kept symmetrical. Accordingly, in the "Ultra H. I. Arc," the carbons are rotated at a speed considerably higher than has hitherto been customary. Intermittently feeding a carbon, in addition to creating noise, will be likely to disturb the symmetrical maintenance of the positive crater and the constancy of the gas-ball. In the "Ultra H. I. Arc," the carbons are not only rotated faster, but fed continuously. As a result, the light-flux does not vary in excess of plus-or-minus five per cent during a burning period of twenty minutes.

Since the advent of sound, it has been customary to provide a means of temporarily stopping the carbon-feed to quiet an arc when it is used close to the microphone. This will inevitably disturb the steadiness of the light; therefore in the "Ultra H. I. Arc," thanks to efficient electro-mechanical silencing, the feed does not need to be stopped; it can, how-

A shot from "Dancing Pirates," Pioneer Pictures. On the swinging boom is Will Kline with a Technicolor camera. Director Lloyd Corrigan is the gentleman with the pipe and William Skall is at his side. Note the lamp rail with the old M-R 36 Cineart lamps and the new M-R-Ultra H-I-Arc lamps. The big lamps diffuse only about 1/3 the light of the smaller ones. Bill Thomas, stills.



ever, be retarded when necessary, without seriously impairing the constancy of the light for short periods.

The "Ultra H. I. Arc" is quite similar in appearance to its smaller companion-unit, the 120 ampere

"H. I. Arc," and only slightly larger. All operating controls are conveniently grouped at the rear of the lamp-house, and the auxiliary grid is demountable, so that the lamp and its grid may be handled separately when the lamp is put on a parallel or overhead lamprail. The elevation of the lamp on its pedestal, instead of being affected by the usual telescoping tubes and clamp collars, is controlled by a convenient crank, operating the lift through irreversible gears.

In actual production use, the lamp was found to be all its designers expected. Designed around a 20-inch lens, it is obviously more compact than the 36-inch mirror Sun Arcs with which it was used, and thus it could be used in places where a larger lamp could not be set up. When high levels of illumination were needed, a space which would be crowded with two Sun Arcs proved ample for three "Ultra H. I. Arcs," and the sections where there was not enough room for two of the big reflector lamps (though their light was needed) sufficed generously for a Sun Arc and an "Ultra H. I. Arc." The wider range of useful beam divergences proved valuable, and the flatter field of the new unit's beam did much to simplify the problem of lighting the big, stage-built exterior sets.

The silence and simplicity of the new units won the favor of both the sound and electrical crews. Retrimming, focusing adjustments, and the like were much easier, especially on the crowded spot-rails; and as one of the recording staff phrased it, "The Ultras are the only big lamps that we never hear!"

Actual use also proved that at all working beam-spreads—divergences of 18 degrees or over—the new lamps, for all their compactness, produce a beam averaging more than 40 per cent greater intensity than that of the Sun Arc. The elimination of the central shadows in projected beams obviates the need for much corrective diffusion, inevitably increases this margin. In a word, actual production use has proved that the "Ultra H. I. Arc" makes lighting natural-color pictures simpler, quicker, and more precise.



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A Voice From Nippon

A Rapid Fire Interview with Harry Mimura

Harry A. Mimura, a member of Local 659, one of the brightest young Japanese in the motion picture world, and who is a graduate of the Hollywood studios, is here from Tokyo to buy photographic equipment for the P. C. L., the big production corporation of Japan.

In a rapid fire interview the other day Mr. Mimura touched upon the following highlights of the cinema in his native land. Said Mr. Mimura:

Japan sends no pictures to China, but a considerable footage is sent to Manchukuo for the Japanese who are settled there.

The Japanese purchase most of their motion picture equipment from the United States. The producers have made some flattering tests, but the cost was so near the same that it was deemed best for the time being to buy in America.

Next to Japanese and American the English pictures are most popular in Nippon, but of the foreign trade America has the world beaten.

Japanese producers believe in television, but they feel that the time for its advent has not yet arrived. They, have, however, their ears to the ground.

Construction of new theatres is active and of style up-to-the-minute. The Japanese have everything that may be found in the best show houses in America and England.

The motion picture producers of Japan are not yet ready to attempt the production of feature pictures of Japanese subjects for the foreign markets. Only shorts are made now, but the time will come when the beautiful Japanese folk-lore is done into pictures—that the whole world will understand.

The Japanese are not particularly intrigued with American color in pictures. They will tell you that the color is too "strong" and that it is too expensive, but they are researching in color on their own account and who knows what they will bring forth.

P. C. L. is the largest and most up-to-date laboratories in the Orient. It has a machine shop as good as any in the United States and the only one in Japan. One interesting item of news is that this shop has just completed a 16 mm. camera and projector—the first ever turned out in the Orient.

Mitchell camera has become the favorite of the major studios of Japan.

Last year the favorite foreign pictures in Japan were "It Happened One Night," "Informer," "Escape Me Never."

The leaders among foreign stars in Japan during the past two or three years were Shirley Temple, Gary Cooper, Frederic March, Miriam Hopkins, Charles Laughton, Clark Gable, Joan Crawford and Claudette Colbert.

The Japanese art as seen and remembered by the passing generation (as the marvelous pictures on Japanese fans) has not departed. The old masters are still there, but the Nipponese are a smart people and their artists are not above modernizing their up-to-date art—and they are certainly making a success of it.

The length of the feature pictures produced by the Japanese averages 7000 feet.

An innovation in Tokyo is a theatre devoted to newsreel entertainment. Its program, in addition to the newsreel, is composed of travelogues, cartoons, educational and industrial films, novelties, etc. The program runs one hour and costs 7 cents in United States money. It has an up-to-date orchestra and has scored a great success.

Japanese cameramen, working in the P. C. L. studios, photograph five feature pictures per year, the time on each picture being about four weeks. The rest of their time is taken up in research, study, rest and travel. Not bad!

At present operating in Japan are ten major studios and three laboratories—the largest in the Orient.

Why is it that only Japanese are employed in the Japanese studios and lots? Answer: So that they may learn motion picture production. Of course.

The Japanese orchestras use the music of the United States bands, but they can furnish Japanese music if necessary.

P. C. L. developed and installed its own sound system. It was entirely homemade, efficient and satisfactory.

Up to the present time "Inkies" have been used and their lighting equipment has been manufactured by the Japanese themselves. Arc lights, says Mr. Mimura are on the way.

The four great movie stars of the Japanese screen are, masculine: D. Okhawachi and George Oka; feminine: Chieka Takehisa and Sachika Chiba, this last named marvel soon to tour the United States.

Hear! Hear! Foreign Technicians!

By PHILIP TANNURA (659)



Yes, once every year, around spring time, the boys get a yearning for a little travel. Their first thoughts are London as the papers, of late, have spoken of the tremendous boom in film production. It's true, but to a certain extent a closed shop for a specified number of technicians. In the past year or two the English companies have been elevating their own junior technicians to head positions, some have come out successfully, others are just getting along. Nevertheless it's cheaper to use a native son than it is to import a foreigner with heavy expenses attached, unless the import is a technical expert in his particular line.

Also in the past some expert technicians have been imported from different countries who arrived with manufactured achievements, only to be found out by the producer as a very, very expensive liability. Some of these men have been assistants and what nots and not the experts they were cracked up to be; so the authorities tighten up the entree for foreign technicians to enter England.

To stop this burglarizing of jobs from good men an association has been formed under the name of the Association of Cine-Technicians. Allow me to quote from their magazine what their policy is towards foreign technicians:

"In response to requests from members, we are pleased to publish A. C. T.'s views on the employment of foreign technicians in the British film industry. The following is a summary of statements issued to the press during the past few months.

"The association makes it clear that it is not opposed to foreign ace technicians working in British studios in reasonable numbers, provided that:

"(a) Their employment does not deprive equally expert British technicians of employment.

"(b) Their crews are British.

"(c) The association is given an opportunity of being consulted when renewals of any such permits are applied for.

"It is felt that the above stated conditions are not regularly observed and that the claims of certain individuals to be ace technicians are not always fully investigated, or, if they are, the fact that they are not definitely in the front rank does not necessarily lead to the refusal of permits.

"Further, it is understood that in the issue of permits the entertainment industry is considered as a whole. We are told, for example, that the employment of British actors and actresses abroad is an important factor in determining the issue of permits to foreign technicians for work in British studios. The Association feels that this retards both the technical progress of a **British** film industry and the personal advancement of the younger technicians.

"Until all countries withdraw their restrictions on the employment of foreign labor it is felt that conditions in this country should be no less rigid than elsewhere. It is extremely difficult for British technicians to work in Hollywood and even a musician of the calibre of Jack Hylton is only allowed to work

in America on condition of his band being composed entirely of Americans. We have stressed the importance of British crews before and in this respect commend the facts about Jack Hylton to the attention of the Ministry of Labor.

"Further, we feel that permits should generally be granted only for a single definite picture, named on the permit, rather than for a time period.

"The Association of Cine-Technicians is not unmindful of the important part played by technicians of other countries in the development of the British film industry, but it does feel that, particularly in view of the considerable number of competent British technicians, at present without regular employment, the whole question of the issue of permits requires careful overhaul."

Americans in London: Lee Garmes is leaving his wife and a beautiful baby girl—only long enough to go to New York to do a picture for Hecht & McArthur—Eddie Cohen holding down the trick department while Ned Mann and Jack Thomas are

(Turn to Page 31)

Even Your
Eye Couldn't
"Stop" That
Lightning
Jab. But



LEICA PHOTO BY W. ULM

LEICA Stopped It COLD!

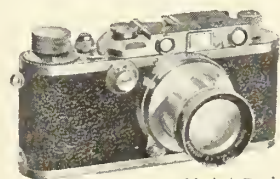
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BELL & HOWELL cameras with old type shuttles silenced, \$150. Hollywood Motion Picture Equipment Co., 645 No. Martel Ave., Hollywood.

ARCHAEOLOGY OF THE MOTION PICTURE

(Continued from Page 25)

¹⁷Illustrated Scientific American, Nov. 16, 1889, Vol. LXI, pp. 1 and 310, article by Anchuetz on the Tachyscope.

¹⁸"La Chronophotographie," J. Marey, Gauthier-Villars, Paris, 1899, also illustrated story by Marey in Scientific American, supp. June 10, 1882, vol. XIII, p. 1.

¹⁹"Horse in Motion," E. Muybridge, University of Pennsylvania, 1882.

²⁰"A Brief History of the Kinetograph, the Kinetoscope, and the Kinetophone," W. K. L. Dickson, Journal Society Motion Picture Engineers, vol. XXI, No. 6, December, 1933, p. 1 et seq.; also "Edison's Invention of the Kinetophone," A. and W. K. L. Dickson, Century Magazine, vol. 48, 1894, p. 207.

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Current Productions in Color

By SILVIO DEL SARTO

Regal Productions, under supervision of George Hirliman, has completed two more feature pictures in color, the last of six color 8-reel features produced by this company since August, 1935.

These also are said to be the first sound color features ever produced outside of Technicolor and they were made with Hirlicolor, the patents on which are owned by Mr. George Hirliman, president of Regal Productions. These pictures also were the first all Spanish features ever produced in color and in two versions—Spanish and English.

Three of these pictures were directed by John Reinhardt and one by Crane Wilbur. Mr. Reinhardt for four years was director with Fox and the producer of all the Fox Spanish features, including the Carlos Gardel pictures.

The cinematography was under the direction of Mack Stengler, color expert, who, since August, 1935, has been under contract to Regal Productions. His staff was composed of Tom Galligan, operative cameraman; William Margulies, first assistant; Perry Finnerman, second assistant; John Jenkins, stills.

An interesting fact in connection with the operations of this successful organization is that two color features were produced concurrently—Spanish and English—and always with one camera, Mr. Stengler's Mitchell.

A new portable sound equipment was used, an equipment developed by Glen Glenn, light valve recording, one hundred percent noiseless background and described by Mack Stengler as "marvelous." That this new Glenn equipment is something that will be heard a lot about is indicated by the many encomiums tossed its way, not only by the Regal Productions, but by the other major producers.

Director of Cinematography, Mack Stengler, stated that before the Hirliman program of color features was launched film manufacturers declared that he couldn't photograph projection background scenes in color, but four beautiful 8-reel features are there to prove that Regal was right.

Mr. Stengler also stated that a peculiarity of Regal photography was a beautiful sharpness hither-

to not seen in color productions, glorious, natural blue skies and sea; the secret, he said, being frequent visits to the desert and to the grand old Pacific Ocean.

As to make-up Regal used formulas developed by Mr. Stengler and Vernon Murdock and applied by Max Factor experts, productive of flesh tones in natural skin texture. They had no trouble at all with make-up.

Night scenes, also, were easy to do, Mr. Stengler having solved that problem by accident in 1934 while he was shooting a color featurette for National Pictures, at San Antonio, Texas, the secret being photography in actual sunlight without any booster lights.

This process was used to advantage by Regal in the filming of "Captain Calamity." The scene was night on a ship's deck—lantern burning, bright sunlight—sneaking up on the ship in a boat; night shots in color—a case of "it couldn't be done," but Mr. Stengler and Hirliman did it for the first time, they say.

A fine example of the projection background and miniature in color was used in "The Rest Cure," done by Mr. Hirliman and Mr. Stengler, under direction of Ray Smallwood. It was described by Mr. Stengler as "perfection."

Hirlicolor Process, itself, was perfected by George Hirliman and shot by John Jenkins, using special attachments patented by Mr. Hirliman.

Special reflectors were used in Regal photography—a new type of metal paint sprayed upon boards and practically indestructible. These reflectors are the product of the Regal photographic department and, according to Mr. Stengler, they are the best things in the way of reflectors now in use in the studios.

Regal Productions is between pictures at this writing, in preparation for two more 8-reel color features, which soon will be announced.

Roy Klaffki was associated with Regal Productions in the laboratory.

OBITUARY

John H. Coakley, Vice-President, Local 621 United Scenic Artists, was killed at 4:30 o'clock, Thursday, March 24, by a fall from a scaffolding at M-G-M Studios. He left a wife and three children.

Deceased was a nationally known scenic artist and a highly respected citizen. International Photographer extends sentiments of heart-felt sympathy to the bereaved family.

HEAR! HEAR! FOREIGN TECHNICIANS

(Continued from Page 29)

sunburning in Hollywood—Francis Lyon doing likewise for Bill Hornbeck, also bound for Hollywood—Jack Okey doing his darndest to finish the building of the new London film studios so as he can snatch a bit of California sunshine—Bob Martin just returned from German Olympics—John Boyle working at A. T. P. until the MOANING HOURS—ditto straight from the shoulder Jack Kitchen—the hermit of Beaconsfield, Arthur Tavares piling up a record of edited pictures for British Lion—Chas. Van Enger just starting a rest with Gaumont British—Glenn McWilliams busy on a G. B. SUPER musical

what?—Otto Ludwig on his way to California—Miniature Jackman brushing up on his French for his holidays—Harry Perry with a long chin waiting for the sunshine—YOURS TRULY packing his bags for a short rest in Switzerland—that is if the war holds up for a couple of weeks.

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Back Issue Department:

Perriwether Murgle, high-powered press-agent for the beautiful screen star.

Lili Liverblossom, has been carried off through a slight misunderstanding and over the desert to the lair of

Willy Nilly, a large Bald Eagle. Lili, with aid of a tailor-made ghost known as

Potty, finds Perri just in time to save him from goodness-knows-what at the hands (tsk, tsk) of the Eagle's wife.

Nelly Nilly, As we again place hand upon throatle, Willy Nilly, who has gone out for a few groceries, is returning laden and listing heavily to starboard.

CHAPTER XVIII

Bringing Home the Sheaves

Yes, sir, there was Willy Nilly, barely able to fly. As he came closer, our heroes, heroines, and villains, not to mention an unclassified ghost, could see that he had a string of fish hanging, like the tail of a kite, from his beak. Under one wing, and seriously hampering his navigation, was snugly tucked a jug.

Willy was completely tired out by the time he reached the nest, and he flung (or flang) the fish and the jug down on the floor of the lair and sank exhausted. The jug tinkled pleasantly. It was half full of an amber liquid. So was Willy Nilly.

"I didn't expect you back so soon, Willy," said Mrs. Nilly. "How did you catch all those fish in such a hurry?"

"Oh, I just swiped them from a couple of fishermen in a boat," answered Willy smugly. "I swiped that bottle of moon, too," he added proudly, pointing at the jug.

"I smell a rat . . ." Perri began.

"That's my wife," interrupted Willy. "I've told her to bathe oftener."

"I smell a rat," continued Perri firmly. "How could you find a boat in this desert? There isn't a lake for miles."

"It was a Dry Lake," retorted the Eagle tartly. "But there aren't any fish in a Dry Lake," argued Perri.

"Don't be ridiculous. These are dried fish!" sneered Willy, waving one in the air and clouting an eagle over the snout with it for picking his talons.

"Stop your nonsense," interrupted Mrs. Nilly, fixing Willy with an eagle eye—a simple enough trick for her. "Where's my snake?"

"Why, here it is," said Willy with an innocent air, picking an object from among the pile of dried fish and tossing it in front of his wife. Nelly looked at it, and anger flared up in her bosom, if I may call it a bosom. There before her was a disjointed wooden toy, an imitation snake.

"One of the fishermen had a child along. I swiped this from the kid," said Willy. "That's a dirty trick to play on me," said Mrs. Nilly.

"Oh, go lay an egg," snapped Willy. And to everyone's amazement, Mrs. Nilly gasped, turned pale, and did. Three eggs, in fact, one after another.

"That's the trouble with you," fumed Willy. You can't take any kidding."

"Dear, dear!" said Potty, jumping and clicking his heels.

Willy looked up at the sound of the strange voice, and started as he saw the shadowy outline of Potty against the dim interior of the nest. "Heavens," he cried, "am I seeing a ghost?"

"Don't be naive," said Potty shortly. "Of course you are."

"Now what will I do?" said Mrs. Nilly, a little hysterical. "Here I have company for dinner and now I have to sit on these eggs, or they won't hatch."

It was Lili's turn to speak up. So up she spoke. "Go get your dinner ready," she said. "I'll sit on the eggs for you."

"You've hardly the build for it, dearie," said Nelly, eyeing Lili's slim figure—in some envy, it must be confessed.

"I can do better at it than I could at cooking an eerie meal," retorted Lili.

"Okay, toots," said Mrs. Nilly, leaving for the kitchen, without further ado.

As Lili settled herself on the eggs with the aid of her new mink coat, she looked up to see Willy Nilly staring at her with a fanatical gleam in his beady eyes. Stretching his claws, he began to move ominously toward her.

Perri, watching, stiffened.

Potty began to glow eerily in the gathering dusk. The air was charged with impending disaster.

(Oh, my, what's going to happen to poor Lili now? Has the Eagle gone mad? Why is he staring at Lili? And what can Perri and Potty do? YOU'LL find out!)

KNEECAP REVIEWS

(No space left on my thumbnails)

"A MESSAGE TO GARCIA." Twentieth Century-Fox's starring vehicle for Wallace Beery. Also marks the return to the screen, after some absence, of Barbara Stanwyck. Rather liberal adaptation of Elbert Hubbard's perennial essay plus book by original message-carrier, Lieut. Andrew Rowan, provides plenty of excitement, humor, and pathos for one picture. Yet somehow the whole thing seems pretty meaningless. Beery gives meaty, flavorsome portrayal of double-crossing exiled American coming through with what we fondly believe to be good old fundamental American loyalty. Stanwyck, beautifully photographed, and proven actress, flats the part of fiery Spanish lass whose heart cries out for her people. Please, such casting! Ennioh she senses the gold beneath John Boles's ten-day layer of about the unkemptest beard in captivity and her heart cries out for him, too. Femme hearts due to be horribly twinged on finding that their Johnny isn't once given chance to shave. Boles does well as possible with rather ordinary role. Alan Hale a thorough rattler as Dr. Krug.

* * *

"ROSE MARIE." A lovely thing with its beauty of setting—and of Jeannette MacDonald. Nelson Eddy an interesting foil for MacDonald in this scarcely new piece. James Stewart as Rose Marie's exhibitionist brother, decidedly outstanding in a brief part.

In general, production follows line of previous MacDonald successes—full of song and of the very considerable beauty of Miss MacDonald. Musical comedy license in abundance is taken. I always resent songs lagged in by the beats, but here it is more excusable than generally. Indian Dance a la Busby Berkeley seemed highly destructive of realism, but I suppose is excusable on grounds of music-comedy.

* * *

"NEXT TIME WE LOVE." Title changed from that of book, "NEXT TIME WE LIVE," because movie-going public doesn't care if you live or not, just so they know whether, why, where, and whom you love. Herein Margaret Sullivan and James Stewart help you analyze the lives of two young people who vow to love, honor, and obey and never interfere with each other's career. In a series of incidents separated by the years and well-timed dissolves, m.g.p. is taken through the life-span of these two sensitive souls who are so considerate of each other that they forego their individual happiness until "NEXT TIME WE LIVE." Casting plum opposite Sullivan probably given to newcomer Stewart so Maggie would have little competition. Jimmy surprises with plenty. A strange young man, far from general conception of sleek screen hero, yet peculiarly compelling of personality. Don't let these remarks mislead you into thinking Sullivan gives a poor performance. Quite the contrary.

* * *

"THE TRAIL OF THE LONESOME PINE," with SOME cast, and superbly directed by Henry Hathaway. Let's get cast out of the way, and clear decks for action. Every one on list counts. Or else gets gypped on pay day. Sylvia Sidney, Henry Fonda, Fred MacMurray, Fred Stone, Nigel Bruce, Beulah Bondi, Robert Barrat, Spanky McFarland, Samuel Hinds, and Henry Kleinbach. That's list on credit title, but real star of pic isn't mentioned—chief character really is old Mother Nature. And she gives a beautiful performance with help of three colors in Technicolor's present process. Usually suicide to inject straight pictorial shots into a rapidly moving tale. "TRAIL OF THE LONESOME PINE" does it—and you love it. Many shots truly breathtaking.

Critic after critic has called it "first outdoor Technicolor picture," an error of the first water. Outdoor pictures have been made in Technicolor since "TOLL OF THE SEA" in 1924. But this is first in Technicolor's comparatively new tricolor process, which went begging until super-cartoonist Walt Disney had the courage to tricolor his Mickey Mouse. Jock Whitney climbed on the band-wagon and then followed "La Cucaracha" and "Becky Sharp." Cinematographers Howard "Duke" Greene and Ray Rennahan certainly

know their color. Greene, with Technicolor practically since its inception, is the man behind the gorgeous photography in "THE TRAIL." A production such as this makes the camera a mobile paint brush and the cinematographer an artist worthy of standing beside Corot, Landseer, and Rosa Bonheur.

P. S.—The actors are very good, too. You can't afford to stay away.

TODAY'S LITTLE FABLE

Once upon a Time there was an Actor who wasn't making very much Money. So he married an Indian Squaw who was getting a mighty nice little Stipend from Her Uncle, Sam by name. But the Romance didn't last, and the Actor sued for Divorce, asking Alimony. He got it. The Indian Woman kept neglecting to send his Check. The Actor kept going to Court about it.

Finally the Actor struck it Rich, got a big Contract, and everything was Rosy. One day he was driving down the Blvd. in his big Car, when he saw his former Wife walking along the Street. He jumped out and greeted her Effusively.

"Hello, Pocahontas," he cried. "Aren't you Surprised to see me in such a nice Car?"

"No catchum Surprise," said Pocahontas. "Long time no sue."

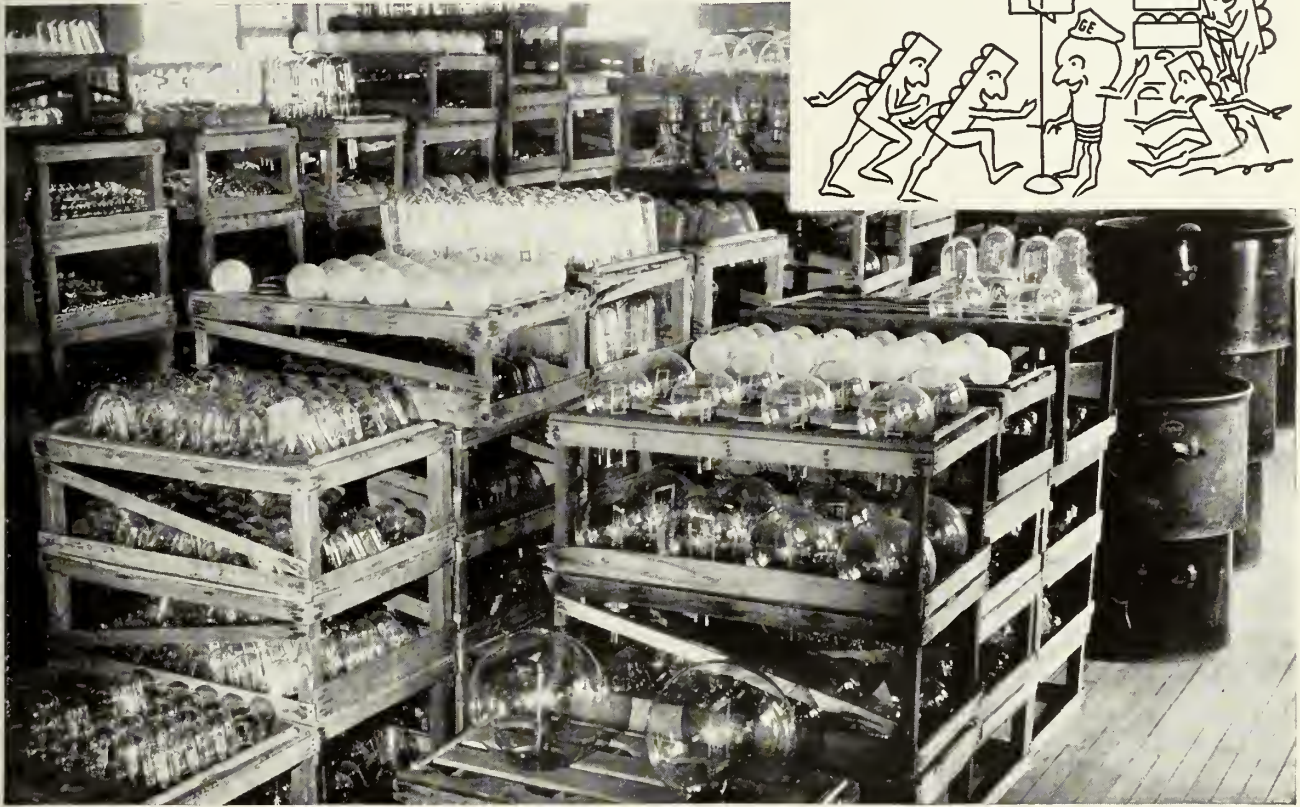
TOO SAD DEPT.

Here lies a poor extra, one Gustave Q. Gnome; He told the director, "It's time I go home!"

HOLLYWOODCUTS, by the Shovel Boys (they dish the dirt). For years Lew Ayres has wanted to quit the grease-paint, and direct. He's been studying to that end, producing 16 mm. pictures in his spare time as practice. Nat Levine wanted Lew to star in "THE LEATHERNECKS HAVE LANDED," for Republic. They couldn't get together on salary. Finally Ayres consented to do the picture at Levine's price provided they would let him direct a picture. It was agreed. With some misgivings Levine lived up to his promise by entrusting Lew with the direction of "GLORY PARADE." Meanwhile Ayres signed a directional long-term with Columbia. Now "GLORY PARADE" turns out to be a fine piece of work—and is Republic chagrined! . . . Al Jolson is the latest to be immortalized in the Graumanesque manner—in concrete in the forecourt of the Chinese Theatre. But just to be different, he did a "MAMMY" and put his knee-prints in the gool . . . Clark Gable and Carole Lombard are running a temperature over each other these days. . . . The Related Warner Boys are planning to star Arthur Treacher in a forthcoming production as a reward for his splendid work in the last few years. This is a bad move. A whole picture full of Treacher would be unforgivable. His is the role of a foil or background and he shouldn't be made to step out of it. . . . Bette Davis called her Academy statuette "Oscar" at the presentation because that's hubby "Ham" Nelson's middle name. Sid Skolsky picked it up and made much of it in his column, and now everyone calls the little jiggers "Oscar." . . . Virtue is justly repayed even in the motion picture business. Anne Shirley, who in one grand bound landed among the fine actresses of far less tender years with her devastatingly real interpretation of a stage-struck little country girl in "CHATTERBOX," is being rewarded by being made a full-fledged star.

The story of the Taboe location trip of the "Bless Their Hearts" company reads like a nightmare. The company went to Lake Taboe to stay several weeks and shoot exterior snow scenes for the picture. . . . The snow storms were so bad they had to shoot interiors. . . . Then Director Elliot Nugent was stricken with influenza. . . . The studio sent up a relief director—he couldn't get past the snow blockade. . . . Next Mary Astor, the star, contracted flu. She finally had to be moved to a Reno hospital, later being moved to Cedars of Lebanon in Los Angeles, where she was attended by Dr. Franklin Thorpe, her former husband! . . . Henry Freulich, director of photography, slipped and injured his neck. Just for good measure, he got a case of flu, too. . . . The second cameraman took over the work, and then the auxiliary lights went out. Power for miles had been cut off. . . . The company was ordered home, and found they couldn't get out. They were snowed in. . . . Snow plows were sent, and everyone left in trucks and buses. A mile or so, and the leading truck stalled on a hill. The men had to PUSH it over the hill! . . . They all finally got to the train. But the car with everyone's baggage never showed up!

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"THE CHARGE OF THE LIGHT BRIGADE"

BERT LONGWORTH

Inspired by Alfred Lord Tennyson's immortal poem. A Warner Bros. production. Left to right: "Limey" Plews, property man; Frank Flannigan, chief electrician; Dick William, Maintenance of sound; Al Green, operative cameraman; Frank Evans, assistant cameraman; Michael Curtiz, director; Sol Polito, chief cinematographer; Jack Sullivan, assistant director; Joseph Bonner, make-up; Olivia de Havilland and Errol Flynn, who play the featured roles. Staff included Mack Julian, still photographer; Stanley Logan, dialogue director; Frank Fox, script clerk; Eddie Larkin, dance director; Frank Mattison, unit manager; Bill Harrington, lieutenant electrician; Mary Dery, wardrobe; Ethel Hogan, hairdresser.

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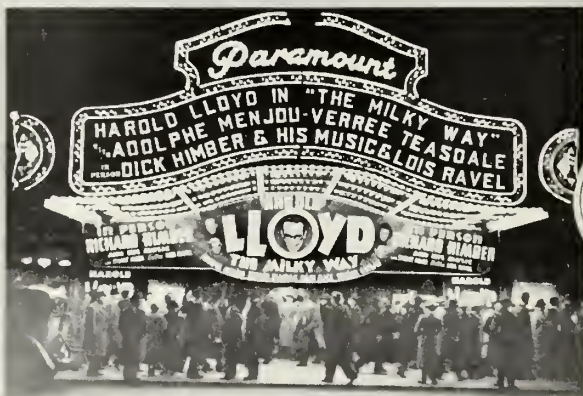
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INTERNATIONAL PHOTOGRAPHER

MOTION PICTURE ARTS AND CRAFTS

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HOLLYWOOD, MAY, 1936

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covering a field that reaches from coast to coast across North America.

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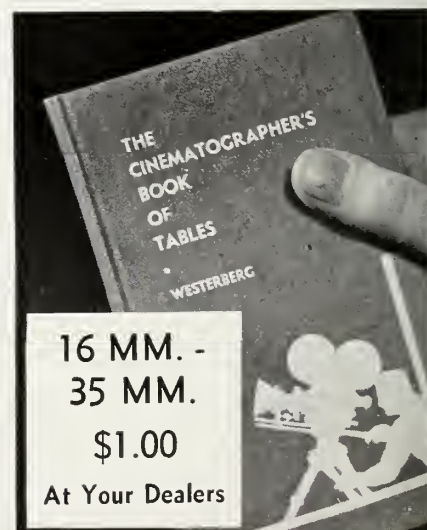
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Infra Red Film For Special Fields in Motion Picture Photography

By WILSON LEAHY

(Agfa Ansco Corporation)

TECHNICAL progress in the motion picture field, and especially since the introduction of sound, has been a slow but gradual advance to the present day excellence. Contributing to this movement, and in most instances exerting a very powerful acceleration, has been a changed technic in writing which permits a wider and more efficient expression of the finer nuances now necessary to a successful story exposition. No doubt, had the industry been content to remain artistically quiescent, satisfied that all demands had been fulfilled by the addition of sound, the solution of technical problems would have been greatly retarded and in general the presentation of a picture as we now see it would be far less efficient.

It is interesting to note also the sharper discrimination on the part of the box office public as the product gained in cultural accomplishment and finally emerged as a full-blown vehicle for the major classics. This, of course, again actuated increased competitive production and resulted in better pictures necessitating tremendous monetary investments, and it is here that the full value of technical progress is appreciated, for time certainly in this case is the soul and essence of economy.

Among other manufacturers supplying material to the motion picture industry, the raw film companies have step by step kept pace with the ever-increasing demands of the consumer. Not only have they kept pace, but in many instances have led the way to accomplishments that otherwise would have been impossible.

The design and production of the new Agfa Infra Red negative was carried out by the Agfa Ansco Corporation with the thought in mind of satisfying a need that would at once be of economic value and enhance the pictorial beauty of any production. Subsequent use and experience have proven the soundness of the idea, and this was demonstrated by the granting to this company of one of the two highest annual technical awards by the Academy of Motion Picture Arts and Sciences for the introduction to general use of this film type.*

It is now possible by the use of Infra Red negative to photograph night scenes in the daytime with more realism and economy than with ordinary panchromatic film. This was recently made evident during the production of a major picture when it was discovered that the script called for a night shot of a coast guard cutter effecting a rescue at sea. It was decided to shoot the scene in the daytime. Naturally, this necessitated complete over-correction of sky and water, but at the same time full retention of inherent contrast in order that certain action and characters remain clearly evident. The scene was successfully made at midday, using Infra Red film with a 29F Wratten filter, thereby saving the cost of



Fig. 1

expensive miniatures and lending a realistic atmosphere that would not have been obtained any other way.

Utilization of this film type for night shots, however is not the only means of securing the available advantages offered. As is well known, Infra Red has been used with excellent results in the past to penetrate atmospheric haze, and this characteristic is particularly valuable in aerial photography wherein fine definition and full cloud correction is desired.

It has also been proven to be of inestimable value for background plates in process projection work where, due to the limitations of the process itself, the finished product generally suffers a loss of contrast and definition. Infra Red negative has produced plates which have successfully withstood the most rigid tests possible both as to grain size and photographic quality.

The speed of Agfa Infra Red negative is approximately one-half that of Superpan when both types are exposed without filter and developed to the same gamma. This film type, however, must be used with red filters, as it is sensitive to blue light rays like all silver bromide emulsions. It is not sensitive to green-yellow, which permits the use of relatively light red filters, as it is only necessary that these filters absorb blue. For this reason, also, the filter factors are practically the same for all blue-absorbing and red-transmitting filters which have approximately the same transmission factors within the visible range of the red end of the spectrum. All Wratten filters from monochrome No. 21 up to 29F fulfill this requirement and will be found to have equivalent exposure factors. Even filters as light as Wratten No. 12, minus blue, and 15G are suitable for most cases, although both transmit some ultraviolet in the wave length range of 300 A.

Tests conducted under conditions comparable to those encountered in production work reveal that the lighter the filter used, the less contrast obtained, and this, of course, permits a wider latitude in the general use of his type film. Filters such as the Aero No. 2 and X 1 even further decrease the contrast and make possible the photography of close-ups with straight panchromatic makeup. With the exception of the last two filters named, the filter factor for Infra Red in combination with Wratten filters from No. 21 to No. 29F has been found by practical test and sensitometric comparison to be of the order of 10 to 15. At standard motion picture camera speed a normal exposure of Infra Red, using Wratten filter No. 25, will be obtained with a lens opening of 5.6. The use of deeper red filters is not recommended, except for special scientific work, as they unnecessarily prolong the exposure due to their lower transmission factor without rendering better picture quality.

*Journal of the Society of Motion Picture Engineers, Vol. 25, No. 3, September, 1935.



That Old DRAGON CENSORSHIP

By LEWIS W. PHYSIOC

(The perpetual threat against the motion picture as an institution. One hundred thousand persons of all sorts estimated to be on the censorship job!)

Every once in a while we hear of the closing of a show by the authorities, the arrest of a fan dancer of the cancellation of the release contract of a motion picture. This seems to suggest that the subject of censorship is still a live issue.

Furthermore, it will continue to be a real problem until the educators institute some system of education that will destroy the lure of vicious suggestion. They must rip aside the veil of prohibitive mystery that invites indulgence. They must establish the overwhelming value of cleanliness and beauty by a frank and open expose of the opposing forces of

darkness. The one cannot live without shame in the presence of the other; but evil influences, when protected by false prohibitions and hypocritical traditions, flourish under the peculiar protection furnished by that alluring mysticism our social customs have thrown around the question of morality.

The moment we erect the sign: "For Men Only," we invite not only men of vicious inclinations, but fire the imagination and arouse the curiosity of the adolescent of both sexes. If we force wickedness out in the open by a system of general enlightenment the need of censorship would soon vanish.—Editor's Note.

IN STUDYING great social problems we can hope for very little help in their solution by our prognosis of the future; but it is logical to suppose that historical analogies will furnish us a reliable text upon which to construct an argument.

History teaches us that many innovations, economic and social that were subsequently proven of great benefit to mankind, were sometimes discouraged and often bitterly opposed. Many resented the advent of the railroads and other great inventions, and automobiles were considered instruments of great wickedness, and some conservatives associated their use almost entirely with clandestine "joy rides." The idea of a girl riding a bicycle was shocking to the average mind. For generations, varying fashions of dress and innocent pleasures, such as cards and dancing, have been attacked as having a demoralizing effect on the youth of the time. The best of our novels were the subject of the most unreasonable prejudice; some of our greatest works were as much feared as Nick Carter or Jesse James, as to their effects on the juvenile mind.

Christianity itself offers the saddest pages of history as to the varying judgment of mankind of what is beneficial to the race. To whom but the censors of the times did Christ speak when He said, "For John came neither eating nor drinking, and they say, he hath a devil. The Son of Man came eating and drinking, and they say, Behold a man gluttonous, and a wine-bibber, a friend of publicans and sinners."

It is not surprising, therefore, that motion pictures should have their opponents, and we find them condemned by those who know the least about them.

These good people cry for the purification of motion pictures and the elevation of its ideals.

Only those who have been intimately connected with the industry can realize the moral character of its evolution. Those who know its early history will tell you that the first pictures shown were almost entirely devoted to the lowest themes and in many cases, filthy, obscene subjects, shown only to men, and boys who dared see them; and for a long time only the boldest characters ventured to perform in them.

They have advanced morally, they have been considerably purified, and some of our recent productions suggest they have very nearly reached the stage where they have been glorified, like the other great arts.

The great concern of our present moralists is the fear of evil influence by immoral suggestion in moving pictures.

History and science both can reassure the most solicitous; they teach us that in all ages, despite the anxiety with which these radical changes (social and civic, and we dare say religious) have been received, the race has progressed steadily.

The dark ages of ignorance, bigotry and superstition have been superseded by the great light of education, by a broadening of perception and independence of mind. Man has reached a state of mental development, a degree of intellectual culture in conceiving and creating, that make it impossible to estimate where and when his achievements will end. It is hardly logical to suppose that moral degeneracy is the natural accompaniment of so great a progression.

Mental relaxation and entertainment have always been subjects of great consideration to man-

kind. As early as 65 B. C., Horace, and 406 B. C., Sophocles were confronted with the problem of the manner in which the drama should influence the ideals of the people; and yet we have survived the influence that these classical plays may have had on the history of morality.

In 1710, Joseph Addison wrote an essay entitled "Petty Censorship," in answer to many complaints against the dress of the day, and also against the English stage tragedies. Despite the remoteness of the date, their problems were so similar to ours, we are constrained to quote at some length from this great intellect.

"There is scarce an ornament of either sex, which has not been inveighed against with some bitterness. . . . It is not my intention, however, to reflect upon red heels or topknots, but rather to enter into the passions of mankind and to correct those depraved sentiments that give birth to all those extravagances. Extinguish vanity in the mind, and you naturally retrench the little superfluities of garniture and equipage. The blossoms will fall of themselves when the root that nourishes them is destroyed."

And of moral behavior we quote further: "I shall not make an example of any particular criminal. If I attack the vicious, I shall only set upon them in a body; I shall pass over a single foe to charge a whole army. It is not Lais or Silenus, but the harlot and the drunkard, whom I shall endeavor to expose; and shall consider crime as it appears in the species, and not as it is circumstanced in an individual."

And in answer to some dramatic critics: "The English writers of tragedy are possessed with a notion that when they represent a virtuous or innocent person in distress, they ought not to leave him until they have delivered him out of his troubles, or made him triumph over his enemies. This error they have been led into by a ridiculous doctrine in modern criticism, that they are obliged to an equal distribution of rewards and punishments.

"I am sure this has no foundation in nature or reason. We find that good and evil happen alike to all men—and as the principal design of tragedy is to raise commiseration and terror in the minds of the audience, we shall defeat this great end if we always make innocence and virtue happy and successful.

"There is nothing which delights and terrifies so much as a ghost, especially when he appears in a bloody shirt. . . . There may be a proper reason for these several terrors; and when they only come in as aids and assistances to the poet, they are not only to be excused, but applauded. Far be it from me to think of banishing these instruments of sorrow and terror from the stage; I know a tragedy could not subsist without them; all I would contend for is to keep them from being misapplied, dramatic inventions made use of by ignorant poets to supply the place of tragedy, and by the skillful to improve it."

So it can be seen that even in Addison's time, there were those who were willing to condemn great institutions simply because they could not be adjusted to the opinions of the few.

In defending motion pictures by scientific argument, it is necessary to keep parallel with history; for the history of science is the history of man.

The study of the influence of motion pictures on morality calls upon various branches of science, viz., psychology, sociology, pathology, heredity; it carries us from the theory of categories to the modern study of instincts; and all these lead in turn to the study of criminology, in which we analyze those conditions which are the primary reason for all laws, moral, civic and natural (or divine) by which men are governed. In the last analysis, the appeal is to pathology, for underlying all other influences that determine an individual's classification in society, his pathological condition is found as the decisive factor.

The three departments of law alluded to are the result of man's experience, and are so basically true that men of all ages, all nations, of widely diversified religious opinions, civil customs and moral ideas, agree upon them thoroughly. From the time when man was emerging from the purely animal to the conscious state, his daily actions furnished the current code of regulations. When the first murder was committed, the animal instinct for self preservation dictated to his fellows the principle that the perpetrator was a menace to their existence; and he paid the penalty by being removed from among those whose welfare he had jeopardized. Then penalty for theft was likewise developed, for even a dog cannot take another dog's bone with impunity.

This process continued until it had such broadening effect on the awakening intelligence that men became conscious of the development of moral laws; which are distinguished from civic laws in that they govern the individual life, furnishing the standard by which he judges the rectitude or obliquity of his own acts and causing him to suffer the penalty of any transgression in his own soul (or conscience) before he has been the subject of judgment by his fellows.

This awakening of man to his true nobility is the inauguration of a long process, at the end of which he becomes conscious of the Divine laws which bind the whole of nature in a system of order and beauty; and this higher state is the stage reached by the normal man today, who has achieved the Life of Reason; for it is through the Reason that all great truths are revealed.

Now the normal mind has learned by experience that adherence to these laws is not only a source of profit, but also of pleasure; for it is impossible for the normal mind to conceive an offense without its concomitant penalty; and obedience to the moral code presupposes not only his own personal approbation of his acts but the good opinion of his fellows, which is a source of profit and pleasure beyond all measure.

The normal mind cannot conceive a crime without a conception, as equally vivid, of a penalty: It cannot contemplate or propose to itself immorality without a salutary sense of the signs of conscience. Nor can a healthy man surrender himself to degeneracy without realizing that the laws of God and Nature will follow him down through the generations and blot out his issue from posterity.

These suppositions seem so logical that all laws—moral, civic and criminal—have been built on these natural, simple truths. They have been formulated to save unfortunate weaklings from themselves, and to protect the future of the species.

Criminologists give, among the principal causes of crime, immorality and degeneracy; passions of anger and jealousy; ignorance; alcoholism; destitu-

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CABLE: "CINECAMERA"

tion and malnutrition; hereditary taint; physical shocks, such as blows on the head; undue repression of the instincts; insanity; and all of these are associated with pathological subnormality, resulting in physical weakness which robs the mind of its power to resist criminal, immoral or degenerate impulses.

These weaknesses—let us not forget that the world has not yet recovered from the lamentable effects of the great war in history—may be due to malformation of the brain or anemic functioning of the brain, making it difficult to establish the correct association of ideas or clouding the impression received through the senses. The subnormal mind has poor machinery to work with in the first place; the categories of space and number and cause and effect by which most of us are able to build up an ordered world, are dimly apprehended and easily erased; add to this the confusion that many minds suffer by the suppression of their natural impulses, with the resulting complexes as the Freudian psychology calls them, and we can see how much the healthy mind owes to nature and humanity for an opportunity to live a life of comparative freedom.

To sum up, what we assume in the normal mind is a balancing of intricate functions and a delicate adjustment of mental machinery, which is achieved through average heredity and environment; and what we are dealing with when we study crime and degeneracy and their causes, is not a material which is the same in all people and which reacts suddenly in good ways or bad according as the immediate stimulus is good or bad; but we are dealing with hereditary taint, pathological conditions, long-continued strain and misdirection and perversion. Given these causes for criminal impulse, we can never foretell where the weakened mind will find its incitement or suggestion to harmful action, and we can never so sterilize the environment that it will not serve to elicit deeds unimaginable to sanity and normality. It was a great student of human nature who said: "It is not that which cometh into a man from without that defileth him, but that which goeth out from within." And this is the beginning of wisdom in the treatment of sin and crime.

The production of motion pictures is entrusted in many cases to individuals who abuse their prerogative. But the facts supplied to us by science as the result of earnest research show that there is a responsibility resting on society greater than can be discharged by a superficial criticism of motion pictures.

There is divine wisdom in the old Biblical passage: "The sins of the fathers shall be visited upon the children unto the third and fourth generations." And if we study the statistics of the scientists, we shall discover that there are graver and more deep seated tendencies to be dealt with those those described as the effects of newspapers and motion pictures.

Among the most vital of the findings of the scientists are those included in eugenics and the study of heredity. Great emphasis has been placed on environment; but we are impressed by the fact that children adopted into the best families have succumbed to an unfortunate hereditary bent; and on the other hand, many who have been thrown into the most dangerous surroundings have survived their influence untarnished.

We find subject for serious thought in the history of two New England families. The progeny of Jonathan Edwards includes sixty physicians, sixty authors, one hundred ministers, one hundred lawyers,

seventy army officers, two hundred and ninety-five college graduates, thirteen college presidents (including presidents of Yale, Harvard and Amherst). Of the Jukes stock in a few generations, there are recorded three hundred and ten paupers, six hundred feeble minded and epileptic, more than three hundred immoral women, one hundred and forty criminals, seven murderers, not a single soldier, not one who had a common school education, and only twenty who learned a trade, ten of whom acquired that advantage in prison. This family cost society \$2,500,000.

Professor Chas. B. Davenport of Chicago says: "Nearly two centuries ago John Preston of Londonderry married Elizabeth Patton of Donegal and took her to the wilds of Virginia. Their descendants were governors, senators and members of Congress, presidents of colleges and eminent divines. There were four governors of old Virginia and many great generals and gallant officers and sailors."

We cannot deny that degenerate minds are dangerously susceptible to any form of influence by suggestion, whether through moving pictures or otherwise. The depraved mind finds vicious mental excitement in some of nature's purest passages. We have known them to search for such stimulus in no less a source than the pages of the Bible. And shall we censor this great text-book of human experience, destroying the force of its truths by deleting its antinomies? Human experience has given us this mirror of life; it reflects the ugly as well as the beautiful, the vicious as clearly as the virtuous; we cannot admire or lose the one without disapproving or despising the other. Over a vivid drama of lust and hate and moral ruin it has written: Unto the third and fourth generation. It has not weakened the force with which the truth is taught by dimming either aspect of life. We may smash the mirror if we will; but it has told us the truth. And this reflection of the truth it has offered not only to the elite but to the common people, teaching that the average man must take the responsibility for handling the good and the bad, and selecting the materials and the design by which he is to build his life.

The criminal tendency is a maladjustment within a person or group; it is not the creation of a moment in a theatre. We cannot deny that the germ cells are directly affected by motion pictures or by actual conditions of which the pictures are only the reflection. Art is a condensation of life; no condensation, no art. The real problem is to improve the mentality that is taking in these impressions from life and art.

Of all the miseries of mind and body, the chief causes are transmitted diseases, especially venereal diseases. This leads to the consideration of eugenics and birth-control.

In past ages, and in some countries today, the great concern of the better classes was their progeny. In the time of Lycurgus perfect mating was the foundation of the social system; a woman who could give to the world beautiful children was all but deified. But in our day and especially in our country,

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Along the shores of the Truckee
River, where the movies go to
shoot their winter stuff. By
Frank Bjerring.



according to Callell's sad statistics, the first design of the intellectuals is how to avoid the responsibility of children. The birthrate among our best stock, especially among scientific men, is unfortunately very low, averaging less than two children per family. But the families of the degenerate average six or seven. Our only hope lies in the law of compensation again; the higher death rate among the lower type offsets the lower birth rate among the higher type.

The improvement of the racial stock and the removal of social conditions that repress and misguide human lives are problems for statesmanship. If the moving pictures help to call attention to the need, that is a distinct service.

Now let us consider what motion pictures are worth to society. Aristotle expressed the Greek conclusion that all arts and employments are to be judged by their value to the state. All elements were to be democratized, and self-expression was to be encouraged. Tragedy in particular served the purpose of purifying (katharsis) the minds of the spectators by permitting them to exercise their emotions of pity and terror and thus be freed of ingrowing and conflicting impulses.

As a means to recreation and instruction, the pictures are rivaled only by the press. The shortcomings of the press we know; but who has proposed a censorship of the press? Admitting that every column offers suggestions for the vicious mind, I hope such a censorship shall never be attempted, for it cannot be carried out without throttling the power of a great institution. The censorship of the press and that of the motion pictures offer the same practical problem.

Motion pictures minister to that instinct of the normal man, the love of the dramatic. The normal mind takes no interest in what are usually meant when we speak of normal things. We love to laugh and cry. Now the drama is the history of extraordinary lives and events, the struggle everlasting between good and evil, and in order to arouse our

anxiety about virtue, we must threaten it with evil. It is as impossible to write a drama without introducing some degree of crime as it is to write a sermon without a text. In this the law of compensation again takes care of things. The bad type of play or picture must inevitably give way to the better.

We may remember the shock that came to some of the moralists at the first problem plays; these have so soon exhausted all the possibilities of sensation as no longer to excite any unusual interest; similarly, in the problem of dress, men have become so used to the short skirt that a pair of shapely limbs no longer has the fascination of mystery. Concealment is a false protection to morals.

In trying to lay the present so-called crime wave to the movies, let us not forget that the world has not yet recovered from the lamentable effects of the greatest war in history. And war, unlike motion pictures, can offer no defense for its tale of lost lives, weakened bodies, shattered reasons, depraved morals, enfeebled wills. The pictures, like life itself today, undoubtedly have to appeal to an impaired mental fiber; there is no remedy but to remedy life.

Let us ask, with Aristotle, is the art good for the state? We believe that it is; recreation is as necessary as food and shelter; the industry has shown its capacity to improve from within; the whole public, by its expressed preferences, constitutes the censorship; and it is safe to say that there are no pictures wilfully designed to show that crime and wickedness prosper over law and virtue. Is there, in fact, any doubt that the picture of life presented in the movies has woven into its texture less justification for wrongdoing, more emphasis on beauty and right, than life in the crude has for just those elements in society whom some would protect with a censorship? It is this problem of life in the crude which presses for solution, and we shall not evade the grim necessity of solving that problem, nor simplify it, by anything in the nature of an official censorship of the newest, the most democratic and the most rapidly evolving of the arts.

Intensity of Sunlight Under Sea

By PAUL R. HARMER

PAPER No. 11.



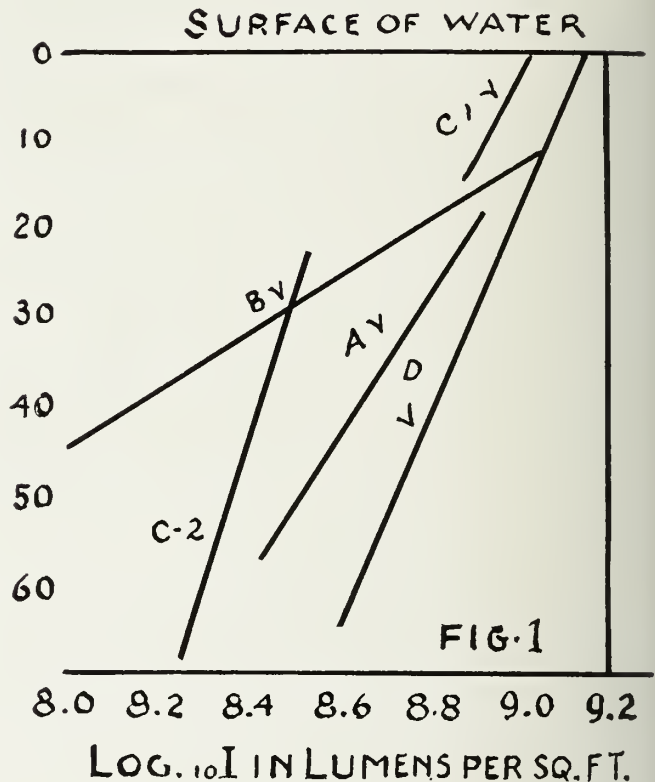
During the summer of 1933, E. B. Stephenson, of the Naval Research Laboratory, had the opportunity to measure the intensity of light at different depths in the open sea of the Pacific Ocean in widely separated areas.

The readings were taken from the conning tower of a submarine, which has four or five eyeports of plate glass, one inch thick and about five inches in diameter.

A portable photometer, a General Electric candle-meter, was placed in a horizontal position two feet from an eyeport. The intensity of light was measured in lumens per square foot. The other ports were closed and the artificial light turned off during measurements. The depths were obtained from the depth gauge of the submarine, corrections being made for the eyeport above the keel.

Temperatures were read from an alcohol thermometer mounted outside a forward eyeport. Each group of readings was taken at irregular intervals during a period of one to three hours while the submarine was under way on an irregular course, at a speed of three to six knots.

The light measured was that which was scattered horizontally so as to come in through an eyeport. The intensity varied with the course of the submarine with respect to the position of the sun. The course was toward or away from the sun, the port and starboard readings checked within about ten percent. On other courses the difference occasionally was as



great as fifty percent. To compensate, at least in part for this effect, two readings each were made alternately on the port and starboard sides and the average value taken. Fortunately the sky was generally clear and bright and the readings were taken between 10 A. M. and 2 P. M.

The plate glass in the eyeport had a green tint, but the accuracy of reading the photometer was not improved by the use of a green filter.

To give a qualitative measure of the under water visibility, it may be stated that on the forward deck of a submarine there is a guard rail consisting of a wire rope supported on stanchions of one inch iron pipe, spaced five feet apart and painted gray. Near the Perlas Islands in Panama Bay one could count two or three stanchions, approximately fifteen feet.

In Lahaina Roads, Hawaii, one could count eight or nine stanchions, approximately forty-five feet.

Near Boronados Islands, California, one could count eleven or twelve stanchions, approximately sixty feet.

(Acknowledgment is made to "Journal of the Optical Society of America.")

GERHARD F. RADZAT MOVES UP

Gerhard F. Radzat, who, during the past four years, has held the important office of secretary-treasurer for the Hollywood Camera Exchange, Ltd., 1600 North Cahuenga Avenue, has resigned to accept an administrative position with the Industrial Supply Co. in downtown Los Angeles.

		Depth in ft.	Lumens per sq. ft.	Temp.	Depth of Sea Fathoms
April 17— Curve A	Pinos Bay, Republic Panama	5 17 52	..... 0.080 .030	26.5C 79.7F 25 77 22 71.6	400
April 19— Curve B	Perlas Islands, Panama	12 15 17 19 34 37 42 47	.100 .075 .060 .075 .020 .015 .012 .010	22.5C 72.5F 22 71.6 22.5 72.5 21.5 70.7 21.5 70.7 21.0 69.8 20.5 68.9 20.3 68.5	30
June 1— Curve C1	Coronado Islands, Southern California	4 6 12 14 23 24	.100 .090 .080 .075 .040 .036	17.8C 63.5F	300
Curve C2		34 44 54 64	.030 .025 .022 .018	14.0C 57.2F 13.5C 56.3F	600
July 18— Curve D	Lahaina Roads, Territory of Hawaii	17 17 32 52	.100 .095 .075 .050	21 C 69.8F 21 69.8 21 69.8 21 69.8	35

The Museum of Modern Art Film Library

By JOHN E. ABBOTT

*Director of the Museum of Modern Art Film Library
485 Madison Avenue, New York*

Abstract from paper read at S.M.P.E. Spring meeting, 1936.

Until last year, no organization existed anywhere for preserving films of outstanding merit or for arranging for their continued distribution. That such an organization would be desirable had been generally agreed many years ago, yet it hardly lay within the scope of the film industry itself to bring it into existence. No man can look forward and backwards at the same time; and no artist is the best judge of his own work. The probability was, therefore, that the films, all of them from the beginning of the industry until now, would lie unseen and unappreciated in their vaults until in the course of time they disintegrated completely. However, if anything were to be done to create a museum of the film, it seemed obvious that a singularly appropriate institution to undertake the work was the Museum of Modern Art in New York, which, since 1929, has so energetically concerned itself with all aspects of contemporary art, from architecture to photography. Yet before it could approach this task three things were needful. One was to ascertain if there existed a serious interest in the film as a living art and in its history and development. Another was money to create and maintain a film library. The third was the cooperation of the film industry.

The Museum of Modern Art found, by inquiry, that colleges and museums all over the country were anxious for material to make possible a serious study of the film. A scheme for the creation and

operation of a film library which would enable the motion picture to be studied just as, for example, mediaeval sculpture or contemporary drama already are studied, was then drawn up by the Museum. A grant from the Rockefeller Foundation and certain gifts of money from private individuals provided the necessary funds to start work. The Museum of Modern Art Film Library came into existence in June, 1935, with John Hay Whitney as President, John E. Abbott, Vice-president and Edward M. M. Warburg, Treasurer. John E. Abbott was appointed Director and Iris Barry, Curator. Later an advisory Committee was formed with the following members: Will H. Hays, Chairman, Jules Brulatour, Stanton Griffis, Dr. Irwin Panofsky, Dr. David H. Stevens and Irving Thalberg.

The Film Library then became actively engaged in the following activities:

1. To compile and annotate a card index of all films of interest or merit of all kinds produced since 1893, both American and foreign.

2. To trace, secure and preserve the important films, both American and foreign, of each period since 1893.

3. To edit and assemble these films into programs for educational and non-commercial exhibition in New York and throughout the country by colleges, museums and local organizations.

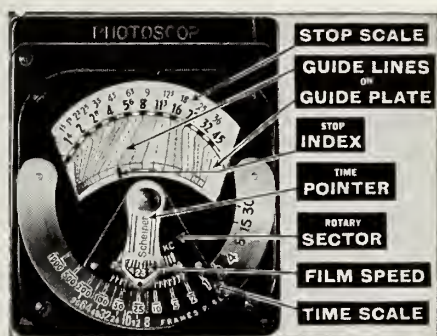
(Turn to Page 28)

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By
KARL A. BARLEBEN,
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Inexpensive Miniature Camera Photography

THAT miniature camera photography has swept the country—no, world—by storm, there is no denying. The public has taken to the tiny instruments like a duck to water, and everybody these days is snapping unsuspecting friends and relatives—candid camera work on a small scale. While the small cameras have made a decided hit, it is true that many thousands are forced to stand by and content themselves with watching other and more fortunate of their fellow beings enjoy them because of their high cost. The fact that these watch-like, precision cameras are endowed with the finest materials, workmanship and lenses, plus the fact that they are almost all without exception imported from Germany, makes their cost prohibitive to many who would gladly give their shirts for one. Unfortunately, dealers will not accept shirts in payment for miniature cameras, with the result that there are thousands in this fair land who have an intense interest, but not enough cash, for a miniature camera.

Wise merchants and manufacturers have long weighed the demands for a low-priced, yet sufficiently well-built and appointed, miniature camera to be produced for the accommodation of those who cannot see their way clear to invest one or more hundred dollars for one of the imported precision instruments. Rumors have been going the rounds for several years of various firms about to start production on an American-made miniature camera. Until recently these rumors were either groundless or incorrect.

Late in December the International Research Corporation of Ann Arbor, Mich., exploded a bombshell! The Argus camera was about to be announced! The I. R. C., after several years of experimentation, was ready to put on the market a good miniature camera, not in the least to be confused with a cheap toy-like affair, at a price of only \$12.50. American-made, too. Here was food for thought. The agents of the imported cameras were somewhat startled, while the wise-acres of miniature cameradom winked slyly at each other. Would the Argus step in and lick the high-priced imported cameras? Would it soon fade away after the novelty wore off? Or would it serve a more practical purpose of permitting new thousands to enjoy miniature camera photography with the thought that with the increased interest many would in time switch over to one of the high-grade and high-priced cameras? The logical and sane viewpoint would be inclined to uphold the latter contention.

Mr. Verschoor, general manager of the I. R. C., likes to feel that the new Argus will find its place in the miniature camera field. This it unquestionably will. And what a place it will find for itself! Thousands of enthusiasts are now going to be able to

enjoy a good small camera at a price that they can easily afford. It is true that the Argus is no Leica or Contax, but it will, nevertheless, satisfy many thousands of enthusiasts who in all probability would have no need for the various refinements and flexibilities of the more costly cameras. The Argus, built of a resinous material with an f:4.5 lens, shutter with speeds up to 1/200th second, and ability to accommodate all standard film rolls such as are used in the Leica, Contax, Retina, Peggy, etc., including natural color film in the form of Lumiere Film-color and Dufaycolor, stands as a most remarkable value. As such, its sales are assured. I. R. C. anticipate many thousands of sales on the basis of honest value.

Not only has America now a standard low-priced miniature camera, but here is more news—I. R. C. will introduce various accessories such as an enlarger, as yet to be announced. For a price the same as, or close to, the initial cost of the camera, this enlarger will boast of the money-saving feature of using the Argus camera itself as part of the enlarging outfit. In other words, the lamp house unit will attach to the camera for the making of enlargements, making it very inexpensive to produce one's own enlargements with simplified equipment. These items and accessories will be released from time to time in the future. There is a rumor that within the next year or two a more expensive precision camera will be introduced by I. R. C. So it appears that we are now about to witness an interesting contest between miniature camera manufacturers.

From where I sit and view the entire proceedings, I cannot help but feel that the Argus will fill a long-felt need. That it will interfere with the sale and use of the higher-priced jobs I seriously doubt. I like to feel that the Argus will bring miniature camera photography and technique into every home, on a simplified scale, of course. Those who buy the Argus now may in the future create a desire for a more expensive outfit with its various flexibilities and attachments. If so, that inexpensive camera will have done a good turn to its so-called competitors. If not, nothing is lost anyway, for the person who cannot afford a high-priced job can't get one anyway. Naturally the Argus will be bought by many thousands who cannot and will not buy the expensive imported cameras. In turn, however, they will be automatically added to the vast army of miniature camera users for the betterment of the entire industry.

Just watch the minicameras being used this sum-



ARGUS
The new
Candid
Camera.

mer. It is safe to assume that there will be a camera in every pocket during the coming months, and whatever gain is obtained in the small camera field can be blamed on I. R. C. for their vision and courage in placing on the market the new Argus camera.

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The Evolution of the Motion Picture Story

Part II.

By EARL THEISEN

*Associate
Editor*

AS EARLY as 1897, Edison used a short two-inch title to carry his name and copyright. This may be said to be the first title, though it carried no picture name or other information, only that it was made and copyrighted by T. A. Edison. This identification was inserted five feet from the beginning, in the first and only scene of the picture. Records do not indicate when pictures were identified by main titles. "The Great Train Robbery" was one of the first big pictures that had such a title.

A company was formed in 1902 by the Gunby Brothers for the purpose of making titles for motion pictures, which would indicate that titles were used at that time; however, Albert E. Smith, one of the founders of Vitagraph, recalls that they were generally adopted about 1904. This is corroborated by Wallace Clendenin.

During 1906 and 1907 the sub-title was used. It was first inserted in the picture to show the passage of time. Such titles as "One Hour Later," "The Next Day," and "One Year Passes" could be seen on the screen. Very soon, because pictures were now rapidly developing a narrative technique, other connotative titles were added to their repertoire. "Love at First Sight," "Bob Meets Betty," and "The Sacrifice" were characteristic examples.

The action around the title, "The Sacrifice," for example, would be one of those eternal love triangles. The best friend loves the girl; the hero puts the hand of the girl in the hand of his friend, and then elaborately sighs, registering disappointment. He exits with his hands over his eyes, which would then be followed by a title, "The Sacrifice."

The sub-title gradually improved until about 1910 when the dialogue title made its appearance. As the title assumed a share of the narrative burden it became possible to improve the plot and slow the tempo of the story.

The producers of pictures felt, as did the Empire Stock Company under the direction of Charles Frohman, that curiosity and mystery around the players would increase their box-office value.

The Imp, an "independent" concern founded by Carl Laemmle in 1909, was the first to publicize the name of the players as a business move against the Motion Picture Patents Company, who had been trying to stop the smaller picture makers. He announced that his company had acquired the services of Florence Lawrence. She had until this time been known as "The Biograph Girl," and it was no small accomplishment to take her—the most noted of the screen players then—away from the powerful patent trust.

The "Sunday Post-Dispatch" of St. Louis carried

a featured article on March 20, 1910, announcing "for the first time that 'The Imp Girl' is really Florence Lawrence." The article also states that she made "300 rolls a year, or one for each working day." That, however, is exaggerated. Florence Lawrence recalls that she made about three pictures a week earlier, while at this time she was making only one.

The "Motion Picture Story" magazine, which was first published in February, 1911, by J. Stuart Blackton, as the "Patents Company" publication, carried stories about the players. This first issue announced, besides others, the names of Florence Turner, known as "The Vitagraph Girl," and Alice Joyce, both Vitagraph players.

One of the earliest pictures in which Edison gave credit to a cast was his 700-foot picture, "International Heartbreaker," released on December 11, 1911.

The advertising of players' names greatly improved pictures. It had a distinct dramatic value, in that the audiences were in a more sympathetic and receptive mood for the players' work. It facilitated characterization. Now for the first time screen players took pride in their work and it was a great stride toward the social recognition of the screen.

D. W. Griffith, though pioneering in most of the other dramatic devices of the screen, did not see the importance and the appeal of the name of the player to the audience. Adolph Zukor, in contrast, capitalized on the name of the player in 1912 with his idea, "Famous players in famous plays."

IV.

The Trend Toward the Artistic

The French pictures in general were superior in narrative technique to the Nickelodeon pictures.

The English, and particularly the Italian pictures, while suitable in their ethnology, began to improve rapidly. In 1911 the Milano Film Company in Italy began exporting multiple reel pictures which very materially assisted in popularizing the longer pictures. Their version of Dante's "Inferno" in four reels was followed immediately by "The Fall of Troy" and "Quo Vadis." They were brought to the United States by George Kleine. Perhaps their best picture, which incidentally was the first to command a \$2.00 admission, was "Cabiria." That was in 1914.

The Kalem Company was the first American company to make a five-reel picture. Their picture, "From the Manger to the Cross," which was made

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in the Holy Land, was released in 1912. (Vitagraph made a five-reel picture, "The Life of Moses," in 1909, but it was released in single reels as a serial.)

Most of the dramatic devices of the motion picture were originated and found their first use in the Biograph pictures, particularly those made by D. W. Griffith. In his Biograph pictures made during 1908-10 there are examples of such fundamental devices as "recurrent theme," "fade in" and "fade out," "camera angle," "contrast," "close-up," "lighting effects," and "montage." Griffith very ably conveyed the abstractions of the "montage" (effect gained by the use of short scenes, for example in war scenes, showing in rapid order the marching of troops, exploding shells, etc., in order to convey the abstraction and dramatize a war sequence). This cinematic device, along with the others in use today, are very ably explained in Dr. Rudolf Arnheim's "Film."

The picture, "A Corner in Wheat," made by Griffith and released as Biograph No. 3646 on December 13, 1909, in a length of 935 feet, was a good example of Griffith's work, and in it are examples of the chief dramatic devices employed today. The picture opened with a fade-in of a poor farmer and his wife broadcasting wheat seed. It showed their meager existence. This cuts to a wealthy buyer who intends to corner this food commodity. To quote from the Biograph handbill: "What a contrast is shown in the office of the Wheat King surrounded by his lieutenants . . . He finally buys all the wheat, and is then shown in a "montage" superimposure effect, majestically standing over the wrecked hopes and fortunes of others. He is lauded for his acumen, wined and dined and regarded as a man among men." He is then shown in the large wheat storehouses, proudly showing the steady flow of wheat into his elevators. He slips and falls into the stream of wheat and is buried with the movement of the grain. A close-up shows his hands waving as he disappears. This picture fades back to the farmer and his wife who are still trudging along throwing the grain from their seed sack. In this fade the tempo of the picture changes. In the sequences showing the Wheat King there had been a faster tempo, which faded to a slower one of the farmer rhythmically swinging his arms as he threw the seed.

A study of the elements of this picture and its contemporaries convinces that Griffith was a master of the dramaturgic art. It is a far cry from the Biograph picture number 958, made about 1900, "It's Unlucky to Pass Under a Ladder, a Prevailing Superstition Verified," or their house-cleaning "Moving Picture from Life" (which was the Biograph slogan then), number 881, entitled "A Moving Picture, and the Difficulties Encountered About May 1st."

Griffith had his first connection with the motion picture as a player in an Edison picture, "The Eagle's Nest," which was made by Edwin S. Porter

in 1907. Before that Griffith had been a writer and stage actor.

Years later his "The Clansman," that later became known as "The Birth of a Nation," due to the suggestion of Thomas Dixon, who wrote the story, was the most pretentious motion picture the industry had yet known. It was first released in twelve reels on February 15, 1915, at Clune's, in Los Angeles. This won for the motion picture much recognition as an art. For the first time it was something more than an industry.

The perfection and use of mechanical equipment for creating dramatic effects received impetus about 1915. "Accelerated Motion" and "Trucking shots" (moving the camera) were used in many of the Essanay pictures of this time. "Slow motion" was considered a novelty in the Pathe pictures of 1915. This effect was used to advantage in the dream sequence of Douglas Fairbanks' "When Clouds Roll By," released on January 4, 1920.

Artificial lighting and its dramatic effects came into vogue about 1913-14. Biograph, however, used lights as a regular thing as far back as 1902, at which time they moved into their famous "Brownstone" at 11 East 14th Street, New York.

Chaotic "superimposure" as a montage effect, while used earlier by Griffith, came into prominence only recently. It was used to particular advantage in Universal's "All Quiet on the Western Front," made in 1930. The "split screen," used to show parallel action, has been in use since 1910. Pathe originated this effect in their early pictures.

The "glass-matte" was perfected by Walter Hall, who used it first in Cecil B. De Mille's pictures of 1920. It was patented a year later. It is an opaque painting, approximately three by four feet in size, painted on glass with portions left transparent. When set before the camera, both the painting and players performing through the transparent portion are combined. It is used to advantage in changing or adding certain features, or beautifying landscapes.

Miniatures are most important in bringing to the screen sequences that otherwise would not be available. The dramaturgic force of train wrecks, volcanic scenes, airplane mishaps or other scenes where human life would be endangered, or where the prohibitive expense of creating sets in full size, such as in foreign architecture or landscapes, are only made available through the use of miniatures.

The use of miniatures date back to 1898. In this year Edward H. Amet made a fifty-foot picture, "The Sinking of Cervera's Fleet," in which he re-created this signal battle of the Spanish-American War by miniature ships and fireworks. In 1906 the Biograph Company released a picture in which they fabricated the San Francisco disaster. The city was re-created of pasteboard in miniature on a table top, and then burned. During this time Melies did some very creditable miniature motion pictures.

The most perfect miniatures have been made by Willis O'Brien, who started making them in 1914. His most recent was "The Lost World," from the A. Conan Doyle story, and "King Kong," in which the major portion of the picture was miniature animated by hand. The more true to life miniature sequences made for the Fox Films by Ralph Hammeras are, however, the most convincing on the screen.

While there were earlier trick photographic processes used for introducing atmospheric background, the first to become popular was the "Williams Traveling Matte," first used in the Famous Players-Lasky picture, "Beyond the Rocks," released in May, 1922.

(Turn to Page 27)

FOR IMMEDIATE SALE!

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The New Viscose Brush Announced

By KARL A. BARLEBEN, JR., F.R.P.S.



THE Viscose Sponge needs no introduction. It has, for the past few years, been the mainstay of thousands of amateur photographers—and all others who require a soft, absorbent material in their work. This sponge, made of a cellulose fibre compound, has been so universally accepted that literally hundreds of uses were found for it, in spite of the fact that it was primarily designed originally for safely wiping film after washing. Since its introduction, people have found that it makes an ideal bath sponge, housewives are crazy about it in their hundred-and-one jobs about the home, especially the kitchen. Pipe smokers, for example, have discovered that a small piece of Viscose Sponge is simply grand in the tobacco humidor to keep the tobacco fresh and moist.

As a film and plate wiping medium, however, the Viscose Sponge has found its greatest use. Previous to its introduction, amateurs, particularly amateur miniature camera users, were continually scratching their tiny films by using various so-called soft wiping mediums. The introduction of the Viscose Sponge at once put an end to all scratches due to wiping. It follows that it was hailed as a real boon to miniature camera photography. I dare say that there are few amateurs indeed who do not use this sponge exclusively for the wiping of their films. I know that since using it, I've never had a single scratch on my negatives, and you couldn't pry me loose from my sponges for anything.

It is good news, therefore, that Willoughby Camera Stores announce a new style Viscose Sponge—pardon, brush. The new brush is the same old reliable Viscose Sponge in new form. A most practical and convenient wooden handle or grip has been fastened to one end, making it doubly easy to use. With this new handle, the sponge can be manipulated with extreme ease and convenience. The new brush is particularly useful to bromoil workers in their technique, eliminating as it does the mess usually associated with the former plain sponge. Yes, indeed, the new Willo Viscose Brush is just the thing for every dark room, regardless of the type of work done in it.

The Willo Viscose Brush comes in two convenient sizes: a three-inch size, costing sixty-five cents, and the larger five-inch size, costing one dollar and forty cents. It is not my custom to go into a frenzy over any products in print, but in this case I feel justified in doing so because the product is **really good**, and I want everyone to know about it, for once tried, it becomes a habit—a habit you will never do without in the future.

Complete details about the Willo Viscose Brush may be obtained by writing direct to Willoughby Camera Stores, Inc., 110 West 32nd Street, New York City. Incidentally, the introduction of the brush does not indicate that the sponge will no longer be available. Both the brush and the sponge type will continue to be sold.

Recent Photograph and Sound Patents

By ROBERT FULWIDER

Attorney-at-Law

2,032,393—Film Gate. A. N. Batsel and I. J. Larson, assignors to R.C.A. Corp.

2,032,397—Projection Printer. R. F. Brady, assignor to R.C.A.

2,032,398—Film Drive Mechanism. R. F. Brady, assignor to R.C.A.

2,032,401—Color Photography. A. B. Clark, assignor to Technicolor Inc.

2,032,410—Motion Picture. A. N. Goldsmith, assignor to R.C.A.

2,032,422—Mechanism for Producing Intermittent Motion. I. J. Larson, assignor to R.C.A.

2,032,506—Sensitizing Photographic Emulsions. W. Schneider, assignor to Agfa Ansco Corp.

2,032,633—Diaphragm for Photographic Cameras. Odon Riszdorfen, Budapest, Hungary.

2,032,676—Viewing Device. A. Warmisham, assignor to Bell & Howell.

2,032,930—Electric Safety Mechanism for Cinematographs. V. Gazulla and D. Arguelo, Barcelona, Spain.

2,033,038—Projector. R. L. Lee, assignor to Motion Picture Engineering Co., Dayton, Ohio.

2,033,193—Method & Device for Reproducing Sound Records on Lenticulated Film. Fritz Fischer, assignor to Siemens & Halske Co., Siemensstadt, Germany.

2,033,225—Projector. Carl Bornmann, assignor to Agfa Ansco Corp.

2,033,277—Film Driving Mechanism for Sound

Pictures. L. A. Elmer and H. W. MacDougall, assignors to Bell Tel. Labs., Inc., N. Y.

2,033,337—Bifocal Distance Sound Concentrator. Paul R. Harmer, Los Angeles, Cal.

2,033,476—Regenerative Sound Recording Device. Bernard Kwartin, Brooklyn, N. Y.

2,033,499—Film Copying Apparatus. Karl Wahl, assignor to Sifico A. G., Shaffhausen, Switzerland.

2,033,945—Method and Apparatus for Recording Sounds on Film. J. F. Lindberg, assignor to Lindberg Sound Film Co., Chicago, Ill.

2,033,957—Optical Reflection and Sound Reproducing Apparatus. F. G. Salcedo, assignor to Consolidated Advertising Corp., L. A., Calif.

2,034,148—Glow Tube for Use in Recording Sound. R. B. Morgan, assignor to R.C.A.

2,034,176—Motion Picture Apparatus. Carmine Doino, Brooklyn, N. Y.

2,034,220—Light Sensitive Layer and Method of Producing Colored Pictures. Donald K. Allison, assignor to Detracolor Ltd., Los Angeles, Calif.

2,034,193—Moving Lens Cinematograph Machine. W. E. John, Johannesburg, Transvaal, South Africa.

2,034,230—Color Photography. L. M. Dieterich and D. K. Allison, assignors to Detracolor Ltd., Los Angeles.

2,034,508—Process for Obtaining Color Contrasts. J. H. De Boer and R. J. H. Alink, Netherlands.

More About the New 20th Century Fox Camera

In November, 1935, INTERNATIONAL PHOTOGRAPHY introduced the first successful silent motion picture camera. The Twentieth Century-Fox Camera—and now comes one of our contributors who favors the magazine with additional comments upon its excellence. Read on:

After lending a more or less sympathetic ear to the troubles of cameramen with respect to the shortcomings of their equipment, we decided to do a little technical investigating on our own. The rumors we heard regarding a certain mysterious piece of equipment that could be operated within two feet of the microphone; that weighed only 82 pounds and did not require the services of a small army of men to move it from place to place about a set, decided us to start upon a little "snooping." We will admit that we were somewhat skeptical, as past experience with these photographic Wonder Boxes proved many times that they would not stand close inspection.

Proceeding to the Precision Machine Shop at Twentieth Century-Fox, we were very pleasantly greeted by Mr. Grover Laube, Chief Cine Technician, who, with Charles M. Miller and Robert G. Stevens of the cine technical department, are the actual inventors of this remarkable camera.

Mr. Laube invited us over to see the camera in operation. Well, after looking it over and seeing it in operation, we decided that what we had heard not only was true, but fell short of doing it justice. The camera was entirely new in appearance, as well as in its mechanical and optical prin-

By
BILLY BOICE

Grover Laube



ciples. It also does all that is claimed for it by its many admirers among the clan of Hollywood film foggers. We prophesy that this camera will in time receive recognition as the answer to the old and very expensive problem of camera silencing.

The employment of the unwieldy blimp as the main factor in silencing the camera during the shooting of sound pictures is, with this new Fox camera, no longer necessary. The inventors have eliminated the cause of camera noise rather than concern themselves with the effect.

The camera may be operated at all speeds within two feet of the sound microphone with no sound cover or blimp.

However, the sound proofing is only part of the final achievement in this camera. Better optical re-

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New: ARGUS CANDID CAMERA

\$12.50

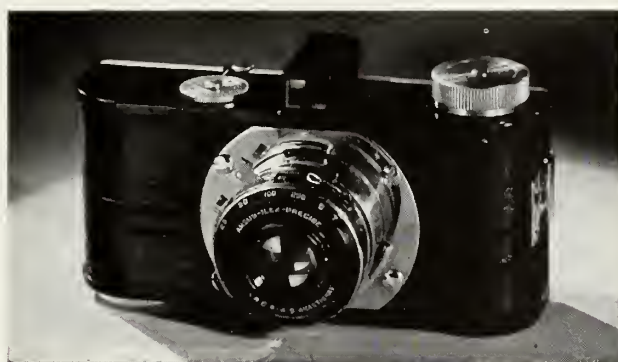
(f:4.5 and
1/200 sec.)

Exciting new photography at a penny a picture!

The new Argus Candid Camera is changing the entire field of photography.

This amazing All-American camera has adapted the technique of the motion picture camera and applied it to the most advanced features of the still camera. Using inexpensive 36 exposure motion picture film, the Argus camera achieves the same sharpness and clarity, the same delightful candor as is found on the screen. The Argus is 5 inches long—weighs 14 ounces. It can be carried everywhere, used anywhere. Sharp, clear prints—to virtually any size—are possible, even though the snapshots were taken under the most adverse lighting conditions.

Natural color photography, too, by the use of natural



(PAT. PENDING)

color film, without change of lens.

Argus lens are needle-sharp—you can catch split-second action. The shutter is adjustable from time, bulb and 1/25 of a second to 1/200th of a second . . . making possible successful photographs of practically any subject.

Unlike costly foreign products, the Argus is a marvel of simplicity. Anyone can take good pictures with an Argus—no confusing gadgets. You merely aim the camera and take your shot!

Argus is new. While many progressive dealers are prepared now to demonstrate it, if the store in your locality has not yet received its Argus shipment, send the coupon for more information.

DEALERS:

The valuable Argus Charter Dealer Franchise is still available in a few communities. Write us as to whether we can offer this franchise to you, for your community.

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Please send me full details about the Argus Camera.

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News Letter From South America

By JOHN ALTON, *Formerly of Local 659*

Buenos Aires, Argentine Republic, 1936.

Dear Mr. Editor:

LOOKS like things are going to pick up at last, so after having signed a contract and received the "on account", I resolved to "pest" you some more from way down here.

The other day I visited the White family, all running around in Turkish bath costume, for hot it was. The humidity here is what kills. The General Electric Company could use Death Valley as an ad for their Frigidaire. These poor boys (mean Bob Roberts) playing the immigrant. It's tough.

Now that it looks like more of the Argentine climate, would you kindly forward your most highly appreciated publication that is like water in the desert, for INTERNATIONAL PHOTOGRAPHER is like a piece of Hollywood and it's mighty good to see familiar faces and hear names you know.

It might interest your readers to know that motion picture production is beginning to be a reality in the Capiol of Argentine. According to the plans for 1936, three studios expect to go full force and the fourth, the Rio de la Plata, under the technical management of Tom White, is in preparation and is soon to knock them for a loop with his Hollywood stuff. The three major ones are: The Argentine Sono Film Company, under the technical direction of "yours truly," John J. Alton. According to my contract I am to supervise all production, but, as I am a born cameraman, I am not going to trust anyone else with the lighting. It remains a hobby.

At present we are installing a brand new studio and have to be ready to shoot by the end of February. During the early part of March we start the first of our 1936 productions and it is to be called "Amalia," after an historic novel.

The second studio on the line is the Lumiton, who are to come out with their first picture entitled, "Machachada de Abordo," a native story. The S. I. D. E. Studios, under the management of Arturo Mom, a son of the Pampa, shows signs of becoming a good producer. One of last season's hits was a picture called "Monte Criollo," directed by Mom. Their first 1936 production is called "Amor y Amor," with special light effects by myself.

The S. I. D. E. Studios, beside producing their own pictures, also rent studio space to the little "Indies," who here and there scrape a few pesos together to invest in the adventure of the picture game,—for game it is.

Tom White's first production is to be called "El Comisario," which translated means "the chief" (of police).

I do not like to talk about the past, for one knows

it is only repetition, but the year 1935 has brought to the foreground a young comedian called Sandrini, who is today the hit of the Spanish world. Among the directors who show signs of real talent is Arturo Mom, whom I have mentioned above. The picture "Monte Criollo" certainly made people think and proved that pictures can be produced even way down below the River Rio de la Plata.

Alberto Zavalia, a young director with his picture entitled "Escala en la Ciudad," and whose photography won the highest merits in 1935, deplores the misunderstanding of most of the world about the Argentine. He proves that Buenos Aires is as modern a city as London, New York, Paris or Los Angeles and the Indians are not running around on the streets and that the only gaucho in B. A. is one working in pictures.

Mario Soffici, another new director, with his picture "El Alma de Bandoneon" beat all local box office records. He is an old stage actor of Spanish fame, and who, if given the proper opportunity, might turn out to be a King Vidor of great Hispania.

We also count that the first so-called producer, Senor Angel Mentasti, president of the Argentina Sono Film, is the first high calibered motion picture producer of the Argentine. He looks, and is, the typical supervisor of Hollywood and would fit the executive staff of any American major studio. Up early in the morning, reading stories for his 1936 program, interviewing foreign representatives, supervising the building of his modern studio, casting the picture, then into the projection room, where, with the interruption of a sandwich and a glass of certified milk, sits through the afternoon signing mail, holding a production meeting, making preparations for the next day—in other words, he is a busy man. And the results show, too. For only a few years ago did he start with "one picture a year" program; then two in 1935, so several in 1936 is quite a stride ahead. He is a man well educated, with the vision of a philosopher and the strong will of a dictator, a master of discipline, but still loved by his employees, for he is human and bound to make good. He has the stuff that makes big men.

And last, but not least, comes my Fotografia, with a big F which, as proven by the clippings you must have received by now, has at last brought the local photographic quality up to standard and even compared with the work of men like Sternberg, Pabst, Eisenstein, etc. It was the result of three and a half years of labor, for it was not my good fortune to have the technical staff Tom White brought along with him.

Yours truly,
JOHN ALTON.



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COLOR MARCHES ON

By HERBERT ALLER

FIRST with the creep of a snail, then like a sweeping hurricane, the transition to color finds itself entrenched in the motion picture studios of Hollywood, for on the lips of every cameraman comes the question: "What do you think of color?"

"Is it here to stay?"

"Have you seen any pictures in color?"

The conversational barometer or the cross-questioning of cameramen as to the relative significance of color became noticeable when the first feature-length picture in Technicolor, "Becky Sharp," was released.

Today the matter is one beyond dispute. Technicolor's achievement in "The Trail of the Lonesome Pine," magnificently photographed by W. Howard Greene, ended all doubt about color's desirability. Cameraman Greene had performed a Herculean task. Acclaim by the cinemaddicts changed public opinion from the thought of experimentation to the acceptance of color as an improved, elaborate and embellished form of motion pictures—unquestionably a contribution to the arts of modern civilization.

Shooting in Magnacolor—a two-color process—we find Cameraman Mack Stengler, responsible for the photographic work on two recent productions produced under the personal supervision of George E. Hirliman. This same producer is now preparing to produce a number of western dramas, starring George O'Brien, in this color.

In the Far East, sometimes in the modern cities of the oldest civilization or concealed amongst the wild animals in the jungles of Asia, may be found Paul Perry, that renowned cameraman, shooting in Magnacolor for companies in Manila and India.

Cinecolor, another two-color process, finds its photographic exponent in Jerry Fairbanks, traveling cameraman. Mr. Fairbanks has given the cinema audiences hours of delight with his novelty reel, portraying modern invention ever so much more effectively exhibited through the medium of color photography. Cameraman Len Roos is another shooting in Cinecolor.

From England comes word that the color likely to be much heard from in the immediate future is

Gasparcolor (Gasparcolor Process by Major Adrien B. Cline, M. B. E., technical adviser to Gasparcolor, Ltd., February, 1936, issue, Journal of Association of Cine-Technicians). Also of interest in England is the DeBrie Color Process known as Dascolor.

In Hollywood, Technicolor, just now, is foremost of all color processes. On his way to England to photograph in Technicolor for the producer, Alexander Korda, is that well-known and popular cameraman, Ray Rennahan, and with him is to be found Henry Imus, assistant cameraman. Cameraman Rennahan should enjoy his stay in England, for his attachment to Hollywood is quite evident. He writes from the tropics: "The tropics are fine, but I do love Hollywood."

Duty bound to perform without flaw, the introduction of feature length motion picture photoplays was the arduous undertaking of the cameramen employed by the Technicolor organization. These cameramen carried with them the inalienable thought that the audience when leaving the theatre must not say the story lagged for the sake of color. The rapid popularity of color has been successful because of the pioneering efforts of so many able, intelligent and unflinching cameramen.

William Skall, who has photographed numerous shorts and recently completed "The Dancing Pirates," a Pioneer production in Technicolor, is about to commence another feature length picture that will be a genuine treat to the cinemaddicts.

Cameraman Skall produced some intriguing effects in "The Dancing Pirates." It is said he standardized a new form of lighting for Technicolor pictures. Consequently it is easily understood why the release of this production is awaited eagerly by his fellow cameramen. In the production of "The Dancing Pirates" Mr. Skall was assisted by Second Cameraman Lee Davis and his two able assistant cameramen, John Hamilton and Paul Hill, of whom the latter is expected to be seen shortly in the ranks of the second cameramen. Skall is now engrossed in photographing "Ramona" for Twentieth Century-Fox.

Cameraman Howard Green is now engaged in

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AMATEUR MOTION PICTURE SECTION

HAMILTON RIDDEL, EDITOR



SPRINGTIME—AND A MOVIE CAMERA

(Contributed by
a Fellow Filmer)

SPRINGTIME—that rarest interim of all the year! Welcome indeed are the days of balmy weather, when the good old Earth casts off its drab winter aspect and is redressing itself in colorful array for the summer months. With the return of the sun, warmly caressing the face of the northern hemisphere, and with winter snows fast becoming dissipated, the cold tomb of seasonal circumstance has indeed been split asunder. The annual resurrection of springtime-pageantry has begun in Nature.

It's just about this time of year that many movie makers smile thankfully at the bright Spring sun, breathe deeply the clear air, and survey the prospects for some good pictures. And, as in every year since the inception of personal movies, there will be two rather distinct classes of amateur cameramen doing this. They both may look alike, as Ike and Mike, and no doubt they both have similar cine equipment, yet the result of their springtime filming will tell quite a different story at the end of the season.

Our friend Ike, for instance, will note only the obvious: Improved cinematographic light of springtime sunshine. Following his usual custom, Ike will grab his movie camera and will proceed to burn up foot after foot on the family kindred, whom he has hastily herded together in the front yard. Never heeding for one moment his subject's protestation of muddy feet and evident dislike of the glaring sunlight, Ike will keep his camera in constant operation down to the last foot of film. Ike, 'tis sad to relate, just **knows** these swell shots will wow his friends and neighbors for all time to come!

Mike, on the other hand, without minimizing the importance of a family film properly produced, has reckoned with the contents of his movie library. Can after can of former filming has revealed, none too kindly, that Mike has committed a common fault in personal movie-making, cine-monotony. Thus it is that an earnest survey in springtime will bring new determination to Mike. For the birth of Spring not only offers new inspiration, it actually provides better opportunities to all movie makers for good pictures.

Some thoughtful preparation, before making a visual record of Springtime, will go far toward insur-

ing happy results. In a reel of personal movies, bear in mind that you will be making and recording **your** impressions of the Spring season. The continuity, or individual treatment of the subject, should reflect the personality of the movie maker in the completed film. Strive to become cinema-minded. Allow full play of the imagination in arranging a continuity; and take every advantage of the features of camera and equipment in picturizing what has been visualized in one's mind. Thus armed with a continuity—written or mental—you're ready for filming.

A short drive, perhaps into the country, will supply ample material for that better roll of springtime shots. With the car parked conveniently and with your movie equipment in hand, the warm breath of Spring will lure the movie maker on and on.

Birds, and such small animals as the squirrel, will challenge one's cinematic ability and patience; causing the movie maker to wade through bubbling streams, or stumble perhaps over fallen logs, and to chase up and down ravines in obtaining those priceless, natural shots of them. In your rambles, don't overlook the lowly turtle sunning himself on a log; or a robin, posing on a tree branch, whose picture is easily obtained with the aid of a long-range lens. Get on your film those lifelike shots of various people you meet on the way, without their being made aware that movies are being taken. Don't forget that beautiful waterfall; or ignore a swift-flowing stream as it leaps over boulders and rocks. Nor must you pass by the stately lighthouse on the cliff by the sea, with fluffy clouds forming a vivid background.

No matter where you live, the freshness of Springtime shots of people and animals and flowers; of canyons and mountains, of forest and country, of city and parks, of oceans and lakes, rivers and streams, and of the setting sun—all make beautiful subjects for the home-movie screen. And any reliable movie camera, equipped with a few useful accessories, will do good work in recording them.

Telephoto lenses, in addition to the standard lens on your camera, will permit greater latitude and afford better results in filming unusual close-up effects; the kind that make friends aware of one's movie making ability. Don't attempt a close-up of a squirrel, then, with a short focal length lens; the animal will surely scamper away, frightened by the approach of the filmer. Use a telephoto! It should be remembered, moreover, that due to Nature's natural camouflage which "melts" an animal into a background, the relative size of the usual home screen will not reveal an animal as clearly and distinctly as it appeared at the time of filming. Again, it is good practice to use a telephoto, and secure the largest possible image of such an object.

Not only is a tripod of great worth—we'd say absolutely necessary—in making telephoto shots, it



Springtime is Movie Camera Time. Shots from the Great Lakes.

also affords solid support for a camera resulting in steadier, more pleasing, pictures on the screen. A steady camera is most important in filming birds and animals, for their lightning-quick movements cannot be easily detected on a motion picture screen unless the background is perfectly stationary. Movement of both subject and background, liable with an unsteadied camera, will prove very disappointing. Be sure the camera is rock-steady when it's in action.

It may not be orthodox advice, but the use of super panchromatic film is to be recommended. When you find yourself in some deep ravine, through which the sun does not penetrate, and you

have an animated subject at bay, such is the time fast film will assure sufficient exposure. When carrying on filming once again in sunlight, super panchromatic will continue to be an able ally. Due to the speed of this film, the camera lens may be "stopped" way down, thereby increasing depth to one's movie scenes and enhancing the beauty of them.

An assortment of filters for the lenses of the camera will prove their worth. Beautiful cloud effects filmed through filters will, in most cases, take on added beauty that has escaped the human eye.

Springtime is movie-camera-time! Let's see what you can do with it!

RIGHT OFF THE REEL

By F. HAMILTON RIDDEL

TITLING Caution: Several years ago, it was the experience of the writer to edit and title a European Travel film, consisting of some 8000 feet of 16mm. The enthusiastic amateur filmer of these 80- hundred foot rolls of motion pictures had been careful to cover most thoroughly, from practically every angle, in long, medium and close-up, every bit of the countries he had visited. Knowing well the tricks of memory, he'd noted names and places on each flim box for future reference in titling. All very well. But, upon his arrival home and following several screenings, the various 100-foot rolls became separated from their respective cartons. The result was utter chaos. Only by exercising a great deal of patience with much work, was order restored. The moral of this experience is: Mark all title notations on the **leader** of individual rolls of film! And further, don't delay titling your films. It's the only safe way to supplement your movie-making.

Split Perforation: There are occasions when a sprocket hole splits out to the edge of a film, due to excessive brittleness of the stock. In projection this damaged perforation may catch and tear out completely, necessitating a splice. If, upon examining a film, you find a split perforation, merely clip a "V" at the damaged spot with scissors. The danger of the film snagging in projection is considerably reduced by this simple means of repair.

Rubber Stamp: Failure, on the part of many movie-makers, to inscribe legibly their name and address on a film carton has given many a headache to motion picture laboratories. When one considers there are thousands of rolls being processed daily, and that your name and address on a film

box is the laboratory's **only** means of identification of your particular film, it is readily realized how important such inscription becomes. The prudent amateur will secure, at nominal cost, a rubber stamp with his name and address on it. And he will make a habit of stamping his film cartons immediately that he buys film.

Reflectors: Too small attention is paid by movie-makers to reflected light and to the value of reflectors. The latter are particularly useful in photographing exterior, back-lighted scenes. By catching the sun's rays on a reflector and throwing them back onto the face of a subject being photographed, greater luminosity is obtained, rendering a more pleasing effect to the scene. In interior work, reflectors again prove themselves of service to the amateur cinematographer. Most any bright surface, such as a silver screen or silver showcard board, two by two feet in size or more, can be employed as a reflector.

Reel Rubber Bands: Every amateur movie-maker knows how film is returned from processing, held snugly on a reel by a special rubber band with handy tab on it. Likewise well known is the proclivity of these special rubber bands to become lost. And of the ensuing trouble caused by an ordinary replacement rubber band when it slips out of one's fingers and down inside the reel flanges. All this grief (for surely it is all that to anyone who's experienced this misfortune) can easily be avoided. Simply take an ordinary rubber band and at one end of it tie a loop knot. Then you'll have as handy a tab grip as was on the laboratory special.

The New Kodachrome Artificial Light Film

factory exposures of such subjects can be made at f1.9 at the regular camera speed of 16 pictures a second.

The introduction of this film is of importance not only to the amateur who makes movies for pleasure, but to photographers engaged in medical work and indoor professional work. Heretofore, the medical photographer working with the aid of artificial light has had to use the compensating filter to obtain necessary color correction. The filter factor which was about "4X," or two diaphragm stops, materially limited the extensive use of Kodachrome for such work.

This new film, designated Kodachrome Film, Type "A," is balanced for the light of the inexpensive and readily available Photoflood lamps but will also render very excellent results with new regular tungsten filament lamps. For white flame carbon arcs the regular daylight Kodachrome film should be used. Since the new film is extremely blue sensitive, care must be exercised to exclude all daylight from the room when artificial light pictures are made.

Type "A" is similar to the regular daylight Kodachrome in that exposures must be judged fairly accurately to obtain the best results, and also the subject contrast must be kept low by the use of soft, flat lighting. This is because Kodachrome is very sensitive in registering slight differences in light and shade, or in shades of color; hence, the contrasty lighting commonly used for black and white pictures is not suitable. So, like the daylight Kodachrome film, the best results with Type "A" will be obtained when the Photoflood lamps are arranged to give very flat or soft lighting.

An exposure guide for Kodachrome Artificial Light Film, Type "A," with Eastman Kodaflectors, accompanies the film. Type "A" may be also used in daylight with an orange filter to compensate for its blue sensitivity; its speed to daylight with the filter being about the same as regular Kodachrome without a filter. This filter will be available in the near future. The price of Type "A" is the same as regular Kodachrome film.



EASTMAN
KODASCOPE E.

IMPORTANT news in the amateur movie world is the announcement by the Eastman Kodak Company of a new type of Kodachrome film for use with artificial light.

Heretofore, in order to obtain satisfactory interior exposures with regular Kodachrome, the amateur had to use more light than the average house is fused to carry, and a blue filter was necessary to compensate for the redness of artificial light as compared with daylight. With this new type of Kodachrome, which is extremely blue sensitive, no such filter is necessary.

The film is about four times the speed, or two diaphragm openings faster, than is the regular Kodachrome with artificial light and filter.

This new film produces much more satisfactory color results by artificial light than have been possible before, and opens up a new field of possibilities to the amateur movie maker.

The new film is fast enough to make pictures of illuminated street signs at night. Times Square in New York City, for instance, offers many possibilities for interesting color pictures of this type. Satis-

CINEMA-TIDINGS

Amateur Motion Picture News

Kodascope E. A new, low-priced 16mm projector, Kodascope E, is announced by the Eastman Kodak Company. Kodascope E is new in style, design and performance. Standard equipment includes a 400-watt lamp, giving more than ample illumination for showing Kodachrome, and a 2-inch f2.5 lens. If maximum illumination is desired, however, a 2-inch f1.6 lens and 750-watt lamp equipment can be had at nominal additional cost.

By a simple, ingenious arrangement, the base of Kodascope E fits down snugly over the handle on the top of its carrying case, and eliminates the bother of setting up or clearing off a table when movies are to be shown.

The projector uses either A.C. or D.C., 100 to 125 volts. Oil impregnated bearings insure permanent, proper lubrication. Other oiling is reduced to the minimum and all danger of oil-spotted film is eliminated.

Other features of Kodascope E are: Simplified threading; line switch in supply cord, with lamp switch on projector; motor driven rewind; joint at top of pedestal base provides tilt of 30 degrees for projector; and as regularly supplied, Kodascope E accommodates 400-foot reels.

Film Division Works Overtime. According to "The Victor 16mm News Reel," demands for the services and film offerings of Film Division, Victor

Animatograph Corp., 242 West 55th St., New York City, have been such that it has been found necessary to increase the Division personnel, and to work considerable overtime in order to take care of existing contracts.

The Division specializes in direct-on-16mm recording. Capable engineers and highly perfected equipment insure the best quality in both voice and music. On this service, the Division specializes in serving laboratories and dealers.

Addition of sound to silent films is another service. Sound can be added to old or new silent pictures, whether they be of 16mm or 35mm size. A staff of editors and highly skilled cutters give a real professional touch to work of this kind produced by the Division.

The Division also specializes in making 16mm sound private by optical reduction printing from negative or positive 35mm originals.

Film Division offers a large selection of sound pictures and short subjects for outright sale only. No rental service is offered. Subjects may, however, be rented through many libraries which the Division is serving.

Naturalist Prepares Four New Films. Four brand-new films by the well-known naturalist, Arthur C. Pillsbury, are announced for outright sale and rental by Bell & Howell Company. The 16mm titles are: "Life in the South Seas" (1 reel. Sound version ready; silent, in preparation)—a trip to Hawaii and Samoa, giving many intimate details of native life.

"Life Under the South Seas" (1 reel. Sound version ready; silent, in preparation)—shows chiefly underwater photography and how it is done. Many forms of marine life are photographed right in their natural setting. In this picture we have the first-known combination of time lapse and underwater photography.

"Plants Without Soil" (1 reel. Silent version ready; sound, in production)—a popular presentation of a radically new scientific method of agriculture. Time lapse photography shows plants growing and blooming.

"Reproduction of Plants and Lower Animals" (1 reel)—a scientific biology film showing, with microscopic detail, the processes of fertilization, conjugation and cell division, as well as reproduction by budding.

16mm Medical and Dental Films Catalog. Bell & Howell has ready for distribution a new edition of its Medical and Dental Films Catalog. A listing of 16mm films on such subjects which are available, from their respective sources, for loan, rental or purchase. Significant is the appearance of a number of sound films among the silent films listed in this catalog.

The new Medical and Dental Films Catalog consisting of 58 mimeographed pages, with cover, will be sent on request to Films Division, Bell & Howell Co., 1801 Larchmont Ave., Chicago, when the request is accompanied by 25 cents in stamps to help defray the cost of preparation and mailing.

QUESTIONS and ANSWERS

By F. HAMILTON RIDDEL

1. What are the causes of poor splices?

There are several but a few include (1) Failure to remove all emulsion from the surface of the lap; (2) Scraping the film lap with an excessively sharp instrument, or excessive scraping which makes the film base too thin; (3) Using film cement which has become too heavy through prolonged exposure to air; (4) Using too much cement, thus causing the splice to buckle; (5) Imperfect registration of sprocket perforations; and (6) not allowing sufficient time for the splice to set before removing same from the splicer.

2. In making my hand-lettered titles, the results are quite disappointing. There is a distinct lack of contrast between letter and background. What is the cause of this?

Your lettering was not heavy enough, although possibly your exposure was at fault. If you are satisfied exposure was correct, look at your title cards. Letter the wording boldly, with heavy strokes, and make sure that the ink dries out jet black, with no gray tones apparent. Always work for extreme contrast between lettering and background in title work in order to secure the best results.

3. What is the usual size of glass filters (special effect type) as used for amateur cameras?

The professional standard, the 2-inch square, glass effect filters are most generally employed. This size is adaptable to amateur filter holder matte boxes.

4. Can a "fade" be made with any amateur movie camera without using a special device?

Yes, by proper manipulation. A fade-out can be secured by gradually closing the diaphragm of the lens, while the camera is in operation. The opposite effect, the fade-in, is obtained by gradually opening

the diaphragm to the pre-determined lens-setting for a particular scene. It is advisable in making fades this way to have the camera on a steady support or tripod to facilitate the work of the movie maker.

5. Can 16mm film be colored by hand, such as the early-day travel professional film?

Such a procedure on a film with as small frame as the amateur standard would be impractical. Tinting and toning the 16mm film is better and far more satisfactory. For true natural color, Kodachrome or Dufaycolor film stock is the practical answer for colorful subjects.

6. In making silhouette movies of persons, how should the film be exposed?

Try for the greatest possible contrast. Calculate your exposure for the white background. Since there is a lack of color in such subjects, ordinary positive film used as a negative will suffice, because of its inherent contrasty nature and will be found particularly satisfactory.

7. In titling a picture, should the titles be worded in the past or present tense?

Generally speaking, when an audience witnesses a motion picture screening they "live" with the picture. Consequently, since titles supplement the action being depicted, the present tense is the better choice for titling.

Note: As a service to amateur movie makers, we extend a cordial invitation to write in questions which will be replied to in this department. Address all such letters to:

Questions and Answers Department,
THE INTERNATIONAL PHOTOGRAPHER,
1605 North Cahuenga Avenue
Hollywood, California



*Advice received
from Film
Specialties of
El Monte, Calif.*

**Lewis River
and Falls in
Yellowstone Park.
By Henry E.
Polak.**

In projecting Dufay-color Film, the natural tendency is to focus so that the small, crossed lines (reseau) are sharpest on the screen.

However, after this is done, if the operator will readjust slightly, moving the lens toward the projector lamp, a point will be found where the lines practically disappear, but where the picture is clear, sharp and bright. The improvement is immediately evident and the results little short of miraculous.

The explanation is simple: On one side of the film the color reseau is placed, and on the other side of the film is the picture-bearing emulsion. It is the latter which should be placed in sharp focus, and the color effect will then take care of itself without the lines being noticeable.

The above remarks apply equally well to either 16 m/m or 8 m/m Dufaycolor Film.

Ques. I have recently acquired a new 8 m/m camera and projector, because I desire to take advantage of the economies of 8 m/m film. But I have several highly prized rolls of 16 m/m film which I of course desire to have available for projection. Can I have these reduced to 8 m/m?

Ans. Yes, 16 m/m films may be reduced to 8 m/m with no loss of quality. Several firms are doing this work. In addition 8 m/m films may be enlarged to 16 m/m, and of course either size may be duplicated with entire satisfaction.

Ques. I am interested in extremely close-up

work. Cannot afford to spend much money for extra equipment. What can you suggest?

Ans. We presume you do not refer to the use of a microscope, but simply want to get as large pictures of normal objects as possible. Probably the most satisfactory, as well as economical, is the use of a small Titling Board. Mount your camera on the board, exactly as if you were going to photograph titles. Get the objects you wish to photograph in the space ordinarily occupied by the title. Be sure that the lighting is sufficient; remember that for extremely close-up work less light enters the lens, and opens it up accordingly. If you are working in bright sunlight probably one stop wider will prove satisfactory; for example, on an 8 m/m camera with standard film in bright sunlight the setting would ordinarily be f.8, but for close-up shots through the titling lens f5.6 will be better unless the object being photographed is white or very light colored.

Some of the most interesting pictures we have seen have been made in this way—bees working in flowers; spider's webs; and other similar ideas.

Color film produces especially beautiful results when used in this way.

Ques. I recently took some pictures of a parade, but unfortunately lost several very important parts because I was changing film when the floats passed. Isn't there some way to avoid this grief in future?

Ans. Yes. A practically continuous record of any such event may be assured by either of two methods. One is the use of a camera with so-called "magazine loading." The time consumed in changing films is reduced to almost nothing flat with one of these cameras. Another sure way is to borrow a camera similar to your own and have an assistant at hand to change films. When one roll is shot, pick up the other camera and use it, while the assistant changes films in the first camera—and so on.

GLASS SHOTS IN COLOR

By EDWIN G. LINDEN

For years black and white glass shots have been the means of shooting scenes which otherwise would have been impossible, and now, with the motion picture industry leaning stronger than ever towards color, added beauty and economy can be had by employing glass shots in color.


A good example of this can be seen in Pioneer's latest all-color production, "Dancing Pirate."

Such shots are, however, not quite as easy to make as one would think. They require the utmost skill upon the part of the cameraman in lighting and the artist in blending and balancing of colors to match those used on the set.

The lighting technique for the three-color process is entirely different from that used on black and white, as ordinary "inkies" cannot successfully be used, and carbon arcs have too much flicker when photographing at an extremely slow speed, so an entirely new method had to be devised.


Artist Byron Crabbe and the writer, in collaboration with the Technicolor Company, made a series of tests to determine the correct colors and lighting to use, and found that many other types of special effects are not impossible.


Beautiful blue skies with clouds can be painted into landscapes where there was formerly only a "bald" sky; scenes shot in daytime can by a simple process be turned into night shots; sunsets, moonlight, stars, etc., are possibilities now in color. The sky is not the limit any more.



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EASTMAN SUPER X
PANCHROMATIC NEGATIVE

HOW TO USE YOUR CANDID CAMERA

OUTSTANDING pictures with the miniature camera! Often the small camera user will peruse his prints and find few which could be included in this class. They may be technically perfect as far as exposure, freedom from grain, selection of paper, etc., are concerned; but there is something lacking. The prints do not picture the subject in a forceful enough manner, to make them "different." They are just another batch of photographs.

Reference to various technical volumes or articles offers no enlightenment in this respect, for they contain information on how to make negatives and prints technically perfect, but do not disseminate knowledge on the manner of making the prints exhibit artistry. In this case, we must confer with an individual who is an artist and is also acquainted

with the technical aspects of miniature camera photography.

With this in mind, Ivan Dmitri, who is a successful artist as well as a famous miniature camera photographer, has produced a book entitled "How to Use Your Candid Camera." This volume tackles the problem of miniature camera instruction in a new and different manner. Instead of a mass of technical data, it contains reproductions of about 70 of Mr. Dmitri's best prints, each exemplifying a different effect. "How to Use Your Candid Camera" indeed takes advantage of the old proverb, "A good picture is worth 10,000 words." This book sells at \$3.50 per copy. A pamphlet describing this new book can be obtained by writing to E. Leitz, Inc., 60 East 10th Street, New York City.

"ONE RAINY AFTERNOON" SCORES

Pickford-Lasky's initial production, "One Rainy Afternoon," on which the camera was started grinding uniquely by means of an actinic ray impulse—as pictured on the front cover of INTERNATIONAL PHOTOGRAPHER, February 1936—delighted a capacity audience at its recent preview in the Chinese Theatre.

One often hears complaints that Hollywood cannot turn out cinema entertainment with the lighter touch that is so much enjoyed in the better Continental productions. If "One Rainy Afternoon" does nothing else, it disposed of that objection to the native output; for it proves that, given the story, the players and the direction, Hollywood is equal to if not superior even in the realm of gay lightness.

For their entering wedge as United Artists' producers, Miss Pickford and Mr. Lasky seem to have made a happy selection to win public support. Consonant with their original announcement, they have brought to the screen a lilting opus "to drive dull care away." And it is as beautifully chaste as a dew-gemmed daisy at sunrise.

"One Rainy Afternoon" is as starry as a night in June for the cast includes such first magnitude players as Hugh Herbert, Roland Young, Erik Rhodes, Joseph Cawthorn, Richard Carle, Eily Malyon and many others who conspire to provide a feast of genteel mirth. Rowland V. Lee again proved himself a deft director. Superb camera effects were turned in by Peverel Marley and Merritt Gerstad.

INFRA RED FOR SPECIAL FIELDS

(Continued from Page 3)

Fig. 1 is a spectrogram of Infra Red indicating the color-sensitivity over the full range of the visible spectrum.

Fig. 2 shows graphs of sensitometric curves exposed on Infra Red film in an Eastman time-scale sensitometer, developed for different times in a regular picture negative borax developer. The gamma-

The sensitometric curves shown in Fig. 2 were developed using a green safelight, Agfa No. 103. Green filters permit the transmission of Infra Red rays to some degree, but fog an Infra Red sensitive emulsion during an extended development. This is evidenced in the fog-density-time curve shown in Fig. 2, which marks the rapid increase in fog den-

Fig. 3

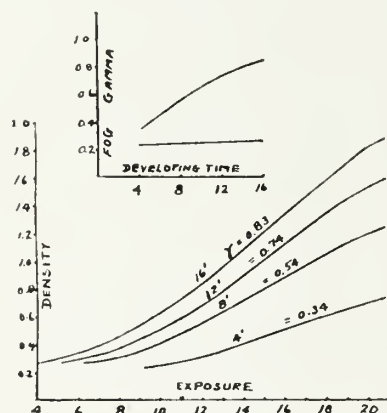
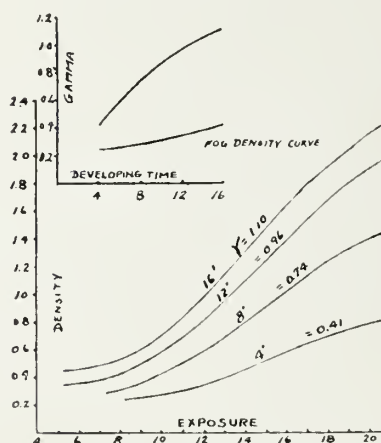


Fig. 2



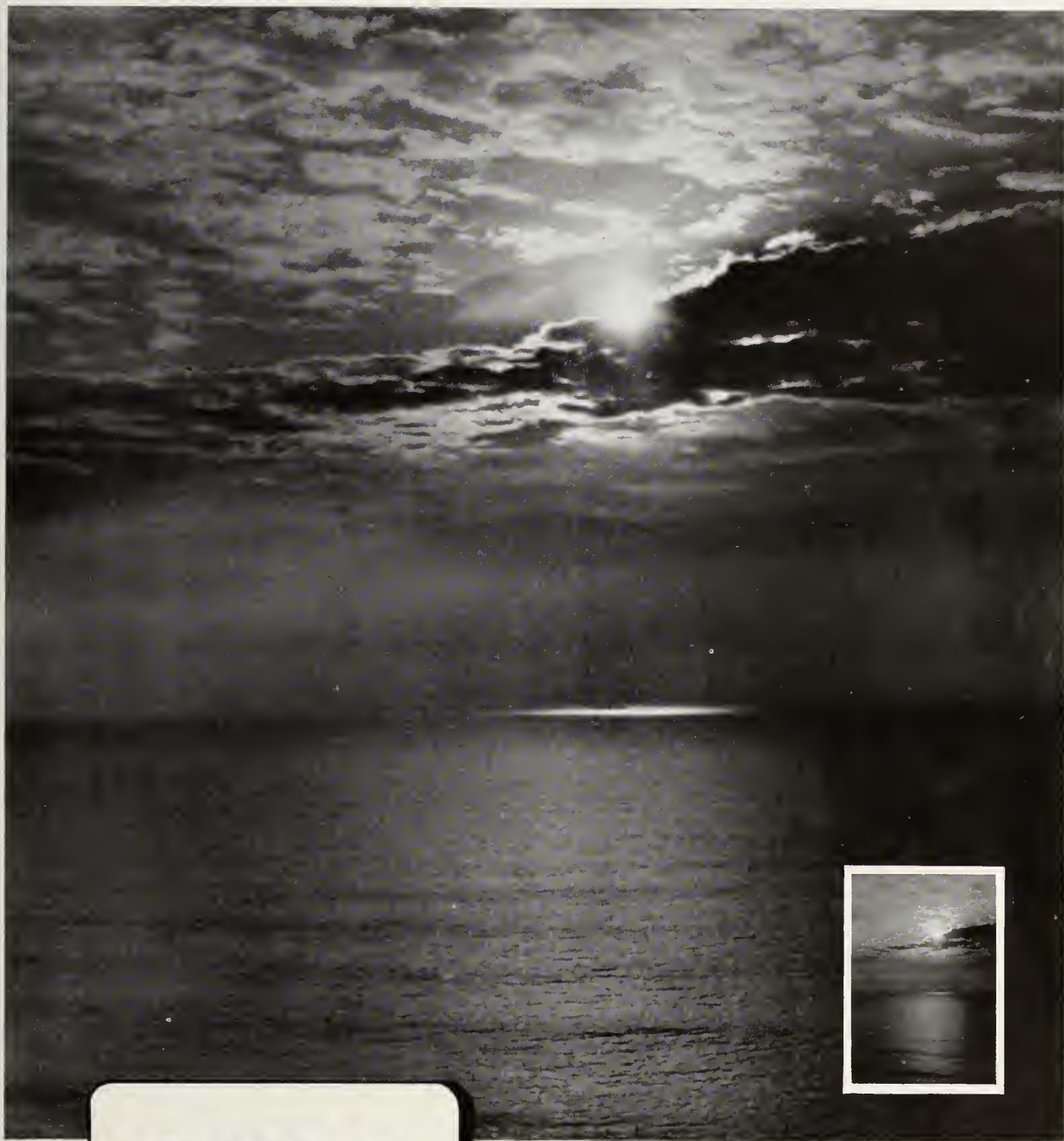
time curve and the fog-density-time curve are also inserted in these graphs.

For comparison of relative contrast, similar sensitometric curves were made on Agfa Superpan and developed in the same developer, as shown in Fig. 3. It will be noticed in these that the gradation of Infra Red film is considerably steeper than that of Superpan. Exposure of Infra Red film through red filters naturally causes an increase in contrast, which was found to be approximately 7 per cent, referring to increase in gamma values.

sity with extended developing time. For normal developing time, however, it is permissible to use green lights with the ordinary precautions.*

It is a fine commendation on the industry in general to observe the rapid application of this type film and the experimentation being carried on to further realize possibilities not yet explored, and certainly it is typical of a business which has in a few short years attained international magnitude.

*Journal of the Society of Motion Picture Engineers, Vol. 25, No. 3, September, 1935.



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A CINEMA COLOR PIONEER

By H. O. STECHAN

WITH the growing interest of British producers in color cinematography, there is an increasing demand for Hollywood cameramen experienced in screen color. Harry Vallejo, a pioneer in the field, is considering offers to cross the Atlantic for the purpose of helping the studios "over there" to get started in this newest film development.

But a chat with Vallejo indicates that it isn't so new after all, since he has been active in the making of color motion pictures since 1911. That year he started with Kinemacolor, on Sunset Boulevard, where the old Griffith Studio stood for many years. There, in association with Bert Longnecker, he had a laboratory in which he processed many of the earliest color films exhibited on the screens of the world, to the wonder and admiration of audiences.

Several years later, Cinematographer Vallejo (he shot the big Clune production of "Ramona," conceded to be one of the most artistic pictures ever brought to the screen) joined with William Worthington in forwarding the first experimental work on the Multicolor process, which showed a marked advance over the earlier achievements of Kinemacolor. The researching of this period laid the foundation for much that has only lately been brought into full bearing in chromatic film production.

Again it was Harry Vallejo behind the camera who made the first big picture in Technicolor, "The Black Pirate," with Douglas Fairbanks as the star, in 1926. This was the furthest point north in motion picture color photography and is generally regarded as marking the beginning of the contemporary era of color production for the screen. Though he may not generally be given credit for any material contribution, it was the technical knowledge of color cinematography which Mr. Vallejo had "dug out of the blue" in the fifteen years of research and experimentation previously which went a long way toward making "The Black Pirate" the sensation of its day on the screen and gave reason to hope that the problems of color photography could be solved.

Some time later, when Howard Hughes took over the Multicolor process and pumped a lot of money

into the effort to perfect it, Vallejo again became interested in its possibilities. For demonstration purposes, he made a series of "shorts," which are still remembered for their pristine beauty. Next, his knowledge and experience were commandeered by the Harris Color Process, which was highly touted at the time.

During the last two years Vallejo has been working with Gabriel Moreno's Crosene Corporation of Los Angeles, which, it is claimed, is proceeding along revolutionary lines. Until now practically all of the processes proposed have been "subtractive"—that is, those where the color is in the film. Crosene uses black-and-white photography and achieves color by projecting through filters.

While admitting that subtractive color is not without certain merits and fine points, Vallejo is convinced that the additive method spells the last word in color for the screen, as it overcomes many of the main objections found with color pictures made subtractively today, he says. Moreover, he is confident that before long all-color productions will be the rule instead of the exception.

"But they will not be the color pictures that we see on the screen today," says Vallejo. "They will be naturally shot, as color is seen in every-day life around us. The trouble now is, it seems to me, that whenever a producer thinks color, he immediately engages a so-called color-conscious artist whose chief concern is to figure out how he can work all of the hues of the spectrum into the picture.

"That makes for unnaturalness at once and requires a lot of costly lighting and more patience to get results, which in the end are not satisfying, but hard on the eyes. Natural colors are easy to look at and they never jar. The trouble with most color productions is that they concentrate on gaudiness and garish combinations, which is all wrong. Bright reds and deep blues may be seen in nature, but they do not predominate like the rich purples and the super-Paris greens of the screen today."

Mr. Vallejo came to Hollywood with the first flight of motion picture workers, and is probably the pioneer camera-colorist of Hollywood.

COLOR MARCHES ON

(Continued from Page 17)

photographing "The Garden of Allah" for Selznick International Productions. His work in "The Trail of the Lonesome Pine" will live forever. It was a monumental contribution to the advancement of color photography. Cameraman Greene has, as his operative cameraman on "The Garden of Allah," Lee Davis and Assistant Cameramen Thad Brooks, Nelson Cordes and Clarence Slifer.

En route to Hawaii we find Second Cameraman Sidney Zipser and his assistant, Roger Mace.

Traveling around the world, photographing shorts of the different walks of life, as produced by Fitzpatrick in Technicolor, we find Second Cameraman Hoch, assisted by Fred Detmers.

Will Cline, globe-trotting second cameraman, is soon to realize an enviable position. It is already known in camera circles that Cameraman Cline is to be elevated to the rank of a first cameraman to photograph an epochal undertaking in Technicolor.

Also we find Cameraman Allen Davey preparing

for his initial performance as a Technicolor first cameraman.

Technicolor is employing many cameramen at the present time. Others are being groomed.

In time we will find many more cameramen in Hollywood working on color pictures. The inevitable has apparently occurred; nothing can stop advancement. COLOR MARCHES ON!

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SINCE 1916
HOLLYWOOD STUDIOS USE THEM IN EVERY PRODUCTION

THE EVOLUTION OF THE MOTION PICTURE

(Continued from Page 13)

Another process was developed in 1926 by the Dunning Process Company, known as the "Traveling Transparency."

The "Rear-Projection" process was first developed by George Teague and was in the Fox Film "Just Imagine," released in November, 1930.

The value and use of the trick processes may be judged from an incident relative to the release in May, 1927, of "Silver Comes Through," the first picture using the "Dunning Transparency." "Silver," who was Fred Thompson's horse, is shown in this picture jumping off a traveling train. The Board of Censors of a state in the United States would not permit the showing of the picture on the ground that it showed unnecessary cruelty to animals. Of course, they retracted when it was explained the horse had not really jumped off the train; instead it was an illusion and was the result of a moving picture of the scenery in the camera being added by technical means around the body of the horse. In other words, the scenery had jumped instead of the horse.

In the scenes where the players are delivering their dialogue in travelling taxis or autos, trains, boats, or airplanes in the air, the illusion of movement is usually obtained by the players sitting near a window through which is seen moving scenery. The "shots" are usually taken in the studio where they have the advantage of sound equipment for the recording of the dialogue, and the travelling scenery is previously photographed motion picture which is introduced through the window by a "process." This type of scene which is used to denote time lapse, movement of the story, or for an opportunity for dialogue, has become a necessity since the advent of

sound, when picture-making was largely confined to the sound stages.

With the advent of sound, dating from the Warner Brothers' John Barrymore picture "Don Juan," released August 27, 1926, the entire technique of the photoplay was altered. New restrictions entered, new devices had to be developed.

The first of the sound pictures were the impersonal creations of musical reviews which had a certain appeal in their beauty of mass movement and rhythm; though in most cases they were unsatisfying.

By 1930 the studios had developed the necessary technique of bringing the picture in a more intimate frame. They eliminated awkwardness in the dialogue and in the placement of the players. Too, they had largely acquired the ability of using a dialogue that was needed to portray the narrative movement.

They are still revising the concepts of story interpretation and the dramatic devices of the silent pictures.

Man in his demand of entertainment, or, if you will, vicarious living and recreation of events, will always present a changing appetite. His desires in this regard do not rest on seeing static or familiar interpretations of themes. For that purpose the cinematic producers will take the old dramatic mechanisms and themes and build a new interpretation.

Story ideas, like "Camille," the "Life of Christ," "Ben Hur," and a great number of others have already been remade in different versions as many as five times.



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**WHAT TO SHOOT—
WHERE TO SELL IT**

Photo Markets recently have issued a very interesting little magazine, the slogan of which is "Make Money With Your Camera." Among other interesting material is "The Market for Photography," "What to Shoot," "How and Where to Get It," "How to Submit Material," "Copyright Laws," etc. This good little book may be purchased from dealers in most of the larger towns, or you may write direct to Photo Markets, Barrister Building, Washington, D. C. The price is 50c a copy.

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THE MUSEUM OF MODERN FILM LIBRARY

(Continued from Page 9)

Once our objects were made clear, the fullest cooperation proved forthcoming; vaults were opened up, films were made available and the conditions under which we might use them were agreed upon.

Our first preliminary circulating series, "A Short Survey of the Films in America, 1894-1932," was released in January, 1936, as a first year course or survey which would provide the ground-work for a more voluminous series of films next year. It consists of five complete programs, entitled, respectively:

The Development of Narrative, 1894-1911.

The Rise of the American Film, 1912-1915.

D. W. Griffith—Intolerance.

The German Influence.

The Talkies.

Each single program is composed of about two and one-half hours of films, available in new prints on either 16 or 35 mm. non-flam but wholly untampered with and uncut, preceded by a long rolling title of exposition and each single film in it preceded also by a brief note of comment and information. Music was arranged as an accompaniment for the silent films and sent out with them. A carefully written critical program-note is also sent out to be distributed to students seeing the films. Stills have been made from the films themselves where otherwise lacking. I think there is little question that anyone who has seen these five programs has had a good grounding in the history of the art, and has acquired a totally new respect for and understanding of the medium. The reports and comments we have had from college professors, members of

art faculties and museum directors have been most encouraging. * * *

4. To compose program notes on each exhibition, which include a critical appraisal of the films and aid the student in appreciation of the medium.

5. To assemble a library of books and periodicals on the film, and of other historical and critical material, including the vast amount of unrecorded data which is still in the minds of men who developed the film. If the history of the formative period is to be preserved, it is necessary to secure this information at once for otherwise it will be irrecoverably lost at the death of these men.

6. To assemble and catalogue a collection of film "Stills."

7. To preserve and circulate the musical scores which are originally issued with the silent films and to arrange musical scores (sheet music or phonograph records) to be circulated with the silent programs when needed.

8. To act as a clearing house for information on all aspects of the film, and to maintain contacts with all interested groups, both in America and abroad.

9. To make available the sources of technical information to amateur makers of film.

10. To publish a Bulletin with articles and illustrations to make known the Film Library's activities and to further the appreciation and study of the motion picture.

We immediately approached the film industry in this country, first through the M.P.P.D.A. and then, individually, the executive heads of producing companies.

NEW CAMERA FILM FOUND

A New York special despatch of recent date is reprinted for what it may be worth. Hollywood cameramen do not grow enthusiastic about it:

A laboratory experiment which went awry has brought about the development of a new photographic emulsion for coating films, plates or paper. It is expected to have far-reaching effects in the photographic industry and films.

It functions in a directly opposite manner from emulsions in common use. The new solution, with the use of ordinary developing materials, prints positives from positives and negatives from negatives instantly. Prints are blacker with the least exposure to light and softer with more exposure, exactly contrary to the way ordinary prints behave.

Developed By Four

Dr. Miller Reese Hutchison, who formerly was associated with Thomas A. Edison and now is a consulting engineer with a record of many inventions, told of the new emulsion today. It was developed

by four young research chemists, George B. Crouse, Francis A. Holt, Karl D. Robinson and Jack Jatlow, who now are giving their full time to perfecting the emulsion.

The new mixture, the ingredients of which are being kept secret, looks like thick cream in its raw state. Spread over film, plates or paper, it is no different from other solutions. But a roll of film coated with the solution used in a camera produces positive black and white pictures when printed instead of a negative under the present process. A compensating lens must be used, however, to keep the films from developing in reverse.

Advantage Cited

In the motion-picture industry, Dr. Hutchison explained, great savings can be effected. Instead of making a master negative, cutting and trimming it and then printing positives as needed, the picture could be taken directly on a positive film and as many copies as wanted printed immediately.

THE FIFTEEN ELEMENTS OF PICTURES

The reproduction of motion pictures is the most complex art. More elements enter into the building of a picture than into any other industry or art. There are untold details, but the principal elements in order of evolution of a picture are:

Financing (overhead, the motive power).

The Story (the foundation of the picture).

Continuity (the plan of action).

Casting (the building material).

Research (verification of the investiture).

Production (art and architectural investiture, stage sets, props, and costuming).

Locations (exterior scenes).

Lighting (placing the color).

Direction (application of the mechanics and expression of the drama).

Photography (registering the action, including the technical placing of sound and color).

Developing and printing (toning the film).

Editing (cutting the picture, placing the subtitles, fixing the tempo).

Distribution (disseminating the prints—the finished product).

Publicity and exploitation (telling the public).

Exhibition (showing the public).

THE CINEMATOGRAPHER'S BOOK OF TABLES

By FRED WESTERBERG

EQUIVALENT CAMERA DISTANCES—(1)
CAMERA DISTANCE REQUIRED WITH VARIOUS
LENSES IN ORDER TO OBTAIN THE SAME
HEIGHT OF FIELD

Height of Field In Feet	FOCAL LENGTH OF LENS IN MILLIMETERS										
	25	32	35	40	50	60	75	100	125	150	
	DISTANCE IN FEET FROM LENS TO OBJECT										
1.0	1.6	2	2.2	2.5	3.1	3.8	4.7	6.2	8	9.4	
1.5	2.3	3	3.3	3.7	4.7	5.6	7.0	9.4	12	14	
2.0	3.1	4	4.4	5.0	6.2	7.5	9.4	12.5	16	19	
2.5	3.9	5	5.5	6.2	7.8	9.4	11.6	15.6	20	23	
3.0	4.7	6	6.5	7.5	9.4	11.2	14	19	23	28	
3.5	5.5	7	7.6	8.7	10.9	13.1	16	22	27	33	
4.0	6.2	8	8.7	10.0	12.5	15.0	19	25	31	38	
4.5	7.0	9	9.8	11.2	14.0	16.8	21	28	35	42	
5.0	7.8	10	10.9	12.5	15.6	18.8	23	31	39	47	
5.5	8.6	11	12.0	13.7	17.2	20.6	26	34	43	51	
6.0	9.4	12	13.1	15.0	18.8	22.5	28	37	47	56	
6.5	10.2	13	14.2	16.2	20.3	24	30	41	51	61	
7.0	10.9	14	15.3	17.5	21.8	26	33	44	55	66	
7.5	11.7	15	16.4	18.7	23.4	28	35	47	58	70	
8.0	12.5	16	17.5	20.0	25.0	30	37	50	62	75	
9.0	14.1	18	19.7	22.5	28.1	34	42	56	70	84	
10.0	15.6	20	21.8	25.0	31.2	38	47	62	78	94	

Based on Standard Sound Film Camera Aperture .631 by .868 of an inch.

EQUIVALENT CAMERA DISTANCES—(2)
CAMERA DISTANCE REQUIRED WITH VARIOUS
LENSES IN ORDER TO OBTAIN THE SAME
WIDTH OF FIELD

Width of Field In Feet	FOCAL LENGTH OF LENS IN MILLIMETERS										
	25	32	35	40	50	60	75	100	125	150	
	DISTANCE IN FEET FROM LENS TO OBJECT										
2	2.3	2.9	3.2	3.6	4.5	5.4	6.8	9.1	11.4	14	
3	3.4	4.4	4.8	5.4	6.8	8.2	10.2	13.6	17.0	20	
4	4.5	5.8	6.3	7.2	9.0	10.9	13.6	18.2	22.7	27	
5	5.6	7.3	8.0	9.1	11.3	13.6	17.0	22.8	28.4	34	
6	6.8	8.7	9.5	10.8	13.6	16.3	20.4	27.3	34.1	41	
7	7.9	10.2	11.1	12.7	15.9	19.0	23.8	31.8	39.8	48	
8	9.1	11.6	12.7	14.6	18.2	21.8	27.2	36.4	45.5	54	
9	10.2	13.0	14.3	16.3	20.4	24.5	30.6	41	51	61	
10	11.3	14.5	15.9	18.1	22.7	27.2	34	45	57	68	
11	12.5	16.0	17.5	20.0	25	30	37	50	63	75	
12	13.6	17.4	19.1	21.7	27	33	41	55	68	82	
13	14.7	18.9	20.7	23.6	29	35	44	59	74	88	
14	15.9	20.3	22.2	25	32	38	48	64	80	95	
15	17.0	21.8	23.8	27	34	41	51	68	85	102	
16	18.1	23.2	25.4	29	36	44	55	73	91	109	
18	20.4	26.1	28.6	33	41	49	61	82	103	125	
20	22.7	29.0	31.8	36	45	54	68	91	114	136	

Based on Standard Sound Film Camera Aperture .631 by .868 of an inch.

MORE ABOUT THE NEW FOX CAMERA
(Continued from Page 15)

sults were possible, too, than with the conventional type of motion picture camera. The manner of monitoring of the image through the finder is particularly novel, inasmuch as the image is perfectly true in respect to the image that is being photographed on the film. This is due to the fact that the optical system is in a position very close to the photographing lens. There is no viewing system taking up room or space between the shooting lens and the lens used on the finder system.

A few of the pictures photographed with this new Twentieth Century-Fox camera are: "Little Miss Nobody," "Show Them No Mercy," "Prisoner of Shark Island" and "Poor Little Rich Girl."

Mr. Laube has been associated with the motion picture business since 1908, and even before was connected with the picture industry in the building of stereopticans. During the World War he was an instructor in photography at Eastman Kodak Company, in their war-time school for photographic branches of the industry. Later Mr. Laube was chief cinematographer for the United States Government at Scott Field, Illinois. Other important developments for which he is responsible are: In front of the lens attachment for motion picture camera and the remote control follow-focusing device.

See outside back cover for cut of camera.

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REAL BARGAINS in 16 and 35 mm. movie equipment and still cameras. Newest types cameras and projectors in all popular makes. Save money on film, lights, lenses and all essential accessories. Our 36 years of experience stands back of every sale. Before you buy, send for our new bargain booklet. Burke & James, Inc., 223 W. Madison St., Chicago.

DEBRIE INTERVIEW MODELS \$250.00 and \$350.00, DeVry 35mm Cameras \$65.00, Projectors \$40.00 up, Holmes 35mm Portable Sound Projector Type 7A \$450.00. 35mm Sound Recording Outfit, single or double system, complete, less batteries \$750.00, Akeley Studio Camera \$800.00. **CAMERA SUPPLY COMPANY, LTD.**, 1515 No. Cahuenga Blvd., Hollywood.

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Rebuilt silenced and Standard Bell & Howell 170° Cameras—Hi-Speed gear boxes—Hi-Speed check pawl shuttles, new Fearless shuttle for Bell & Howell. Complete DeBrie equipments. All metal Model L with motor, lenses and tripod. Metal Model H with lenses and tripod. Super Parvo ultra silent studio camera (see display adv. page 27). Two Single System cameras complete with sound equipment—Mole Richardson Perambulator with tilt head—Two Bell & Howell rebuilt Spicers as new. Portable blimp with follow focus for Mitchell Camera. 100 ft. Stineman Developing outfit. Used Holmes 35 mm. Sound-on-Film Projector complete. Precision, DeBrie and Bell & Howell pan and tilt tripods. Bell & Howell 1000 ft., 400 ft. magazines. Motors, sunshades, finders, lenses and all accessories. Write, wire or cable.

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MITCHELL CAMERA, all built in features. Five 400 ft. magazines, 40-50 Astro F2.3 75 mm. F3.5 Carl Zeiss, Pan and tilt tripod, two new cases—sunshade. \$750.00. Irving Browning, 110 West 40th St., New York City.

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FOR SALE—SOUND RECORDERS AND EQUIPMENT

LIKE NEW BELL & HOWELL 5-way Sound Printers and Sound Movielas. Reasonable price. **HOLLYWOOD CAMERA EXCHANGE**, 1600 Cahuenga Blvd., Hollywood, Calif.

ART REEVES, latest model 1935, double system sound recording installation, factory guaranteed, Automatic Speed Control Motor, Twin Fidelity Optical Unit, Bomb microphone, the only genuine, modern, workable ArtReeves equipment for sale in Hollywood outside factory. **CAMERA SUPPLY COMPANY, LTD.**, 1515 No. Cahuenga Blvd., Hollywood.

POSITION WANTED

DO YOU WANT A CAMERAMAN who is an expert on studio production; or an expedition cameraman who knows every corner of the world; or a cameraman who thoroughly understands the making of industrial pictures; or an expert newsreel photographer; or an expert color cameraman? A limited number of cameramen, backed by years of experience, are available. Write stating your requirements and we shall be glad to assist you in choosing the kind of cameraman you want. **INTERNATIONAL PHOTOGRAPHER**, 1605 North Cahuenga Ave., Hollywood.

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8 MM. ULTRACHROM, NATURAL COLOR, FINE GRAIN—\$3.50. S. S. Panchromatic, reversible, and Positive Palomar Titling Film, for all 8 MM. Cameras, reversible data. Home Titling Data, Accessories, Processing, Titling, reducing from 16 MM. to 8 MM. "Movie Making Made Easy"—50c. "Money Saving Tips for the Amateur Movie Maker"—25c. "How to Make Money with a Movie Outfit"—15c. Cine Nizo Camera Distributors. **FILM SPECIALTIES**, 111-N. El Monte, California.

DEVELOPING DUFAYCOLOR FILM

LEICA DUFAYCOLOR and other miniature camera owners who use the 35mm. film. We are now prepared to develop your Dufaycolor film, brilliant, beautiful, zippy colors. We guarantee to show more color than ever before in this color film with less lines. Processing One Dollar. **FILM SPECIALTIES**, Box 111D, El Monte, California.

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WILL PAY CASH FOR: Bell & Howell, Mitchell, Akeley or De Brie Cameras, lenses, motors, parts and accessories. Motion Picture Camera Supply, Inc., 723 Seventh Avenue, New York City.

MISCELLANEOUS

THE INTERNATIONAL PROJECTIONIST, a monthly magazine published in the interests of the projectionist. Interesting, instructive. Yearly subscription U. S. and possessions, \$2; foreign countries, \$2.50. James L. Finn Publishing Corp., 580 Fifth Ave., New York.

COMPLETE COURSE IN FLYING—If interested in aviation, see Roy Klaffki, 1605 North Cahuenga Ave., Hollywood.

WANTED—To know of the whereabouts of motion picture relics, documents, or equipment of a historical nature for Museum purposes. Write Earl Theisen, care of International Photographer, 1605 Cahuenga Ave., Hollywood.

CAMERA REPAIRING

BELL & HOWELL cameras with old type shuttles silenced, \$150. Hollywood Motion Picture Equipment Co., 645 No. Martel Ave., Hollywood.

PRESENT TRENDS IN THE APPLICATION OF THE CARBON ARC TO THE MOTION PICTURE INDUSTRY

By W. C. KALB

National Carbon Co., Cleveland, Ohio

The present trend in the application of the carbon arc to the needs of the motion picture industry is toward more extensive use of the high intensity arc. This is true both in the theatre and in the field of motion picture production.

The limitations of the low intensity arc, both as to brilliancy and quality of light, are discussed and compared with like properties of the high intensity arc. The needs of the small theatres for increased volume and improved quality of projection light having been met by the development of the AC High Intensity and Suprex type arcs, the demands of the largest theatres for still greater volume of projection light are now met by the new Super High Intensity Arc.

The trends in projection lamp design as related to light on the screen are briefly discussed.

The discussion of the progress of carbon arc lighting in studios covers the new White Flame Carbon Arc for broadside illumination, the new Sun Arcs and Rotary Spots designed to prevent interference with sound productions, and the application of the new Super High Intensity Arc to background projection.



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becomes an integral part of your sound recorder—this unit is cemented into a steel block—it focuses a beam of light of great intensity and actinic value a distance away and on the film, which PROVIDES CLEARANCE and PREVENTS SCRATCHING of the sound track. The width of the beam of light measures from .0005" to .0008" as it strikes the moving film.

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Hollywood

COLUMBIA MOVES AHEAD

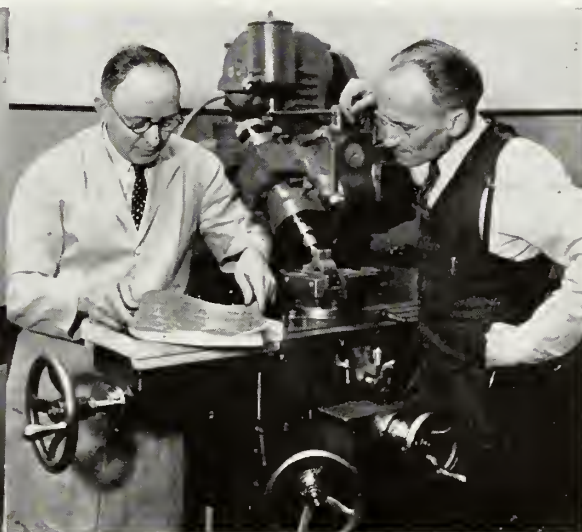
On the Columbia Studios lot in Hollywood has just been completed a modernistic new building that houses the entire camera department of the studio. It is said to be the finest and most efficient building specially constructed for studio camera work in cinematown.

Emil Oster, director in chief of the Columbia camera department, refers to the new building as the "gem of the Columbia lot," and states that in his opinion it is the camera department after which will be modeled all future studio camera departments in Hollywood.

"Columbia's new camera department was constructed with two ideas in mind," Oster said. "First,

Included in the equipment in the machine shop, which is under the direction of John A. Durst, recognized as one of the most competent camera engineers in the United States, is a 14-inch Porter-Cable tool room lathe; a 9-inch Cataract bench lathe; a new No. 12 Van Norman milling machine and attachments; a high class new type drill press and a specially constructed Onsrud air grinder.

At present the machine shop is not manufacturing cameras, but is simply keeping the motion picture and still cameras used by Columbia in perfect condition. At a later date, according to Durst, the machine shop will construct new cameras for the studio.



Columbia Studio's New Camera Shop. Right: John A. Durst, Head of Machine Shop. Left: Emil Oster, Head of Camera Dept.

the plans called for a centrally located building readily accessible on the lot, which would incorporate all the units of the department under one roof, thus providing a maximum in efficiency.

"Secondly, the plant was constructed with the thought in mind of providing a really healthful place for the cameramen to work. We have accomplished these two things in our new building."

The new department includes the most modern and complete precision machine shop to be found in any Hollywood studio—\$10,000 alone was spent on the equipment for the shop, which is capable of constructing both motion picture and still cameras.

Another innovation in the building is a complete test room in which it is possible to develop a test on a motion picture film. This saves time and effort since the test can now be made in the camera department as the roll of film comes in. This room can also be used to develop still photos.

In addition there is a new loading room four times larger than the space available formerly, and an unusually large film stock vault in which is stocked approximately 1,000,000 feet of film at present.

Oster remembered the fact that the employees of a camera department spend at least half their lives within their workshop. For this reason he insisted that the new building be air-conditioned. The temperature is constant at all times in the department.

"I am convinced we get a far greater degree of efficiency by maintaining an ultra-healthful workshop," Oster said. "We even have showers in the building for the convenience of our men and we don't object in the least when they take a few minutes of time to step under the shower."

Oster added emphatically: "And our shower room isn't just for the bosses in this department, either."

With the entire department under one roof, it is possible to keep in touch with each unit with ease, according to Oster. This promotes better understanding between the various departments and aids greatly in maintaining the highest possible efficiency.

At present approximately 53 persons are employed in the Columbia camera department.



William Skall, one of the brilliant young exponents of color—now a member of the Technicolor organization.

CINEMACARONI

(With Sauce for Those Who Like It)

By ROBERT TOBEY

HOLLYWOOD HONEYMOON

(A novel novel of a thousand and one nights in a daze.)

By R. THRITIS

Synopsis of preceding installments:

Everything has happened I could possibly think of. Read the back issues and see whether you could do any better. If you think I'm stooped, you ought to see my uncle. Carry on from there.

CHAPTER XIX—A BURST FOR FREEDOM

As Willy Nilly moved ominously toward her, Lili sat rooted to the spot. After all, she had to keep the eggs warm. It was a bit terrifying however, as the Great Bald Eagle's eyes were particularly beady in the summer twilight. At least I have Perri and Potty to look out for me, thought Lili, in quotes. As if in answer to her thought, Murgle and the eerily glowing ghost closed in behind Willy, one on each side. The eagle stopped a foot away from Lili's face. It was a tense moment. Lili's figure shook with fear.

"You might stop rattling Nellie's eggs together like that," said the Eagle pointedly. "And do you mind if I have that bug on your collar Or is it something you want to eat yourself?"

"You take it," said Lili generously, studiously avoiding a glance at the large snagglegub on her coat.

The bug was down the eagle's gullet in a trice. "Thanks," said Willy.

"That's all right," answered Lili rather peevishly. "But I don't see why you had to stare me right in the eye."

"I'm sorry," apologized the Eagle. "I meant to be staring at that delicious snagglegub. If you noticed, I was staring at you with one eye. I'm a little cross-eyed."

At that moment Nellie poked her head out of the kitchen. "Come out here," she cried. "You have to dry-clean these fish!"

"Aw," said Willy, and went.

"Now's our chance," whispered Perri excitedly.

"What chance," asked Lili.

"To escape, you dumb dora."

"Oh, that's right," said Lili. "We do have to escape. But how can I leave now? I must keep these eggs warm."

"Don't be silly," said Perri. "What do you care about a couple of Eagle eggs! Let's get going."

"I can easily see that you've never been a mother," said Lili haughtily. "It's my duty to stay here with the eggs. You boys had better go and leave me to my fate." Ever the actress, that Liverblossom.

"Come, come," said Perri impatiently. "Forget the eggs and let's get out of here."

"I promised," said Lili stubbornly.

It began to look as if another impasse had been reached. But Perri as usual with his quick wit thought of a way out.

"I have it," he cried. "I've got an electric warming-pad in my pocket. We'll just leave that on the eggs and that'll hatch 'em in no time."

Almost roughly he pulled Lili from the eggs and adjusted the pad over them.

"You don't happen to have a hot cup of coffee in your pocket, too, do you?" inquired Lili icily.

"Certainly," answered Perri, and abstractedly reached into his overcoat and pulled out a cup of coffee. "I haven't any cream for it, though," he added. Meanwhile he was hooking the heating pad up to a nearby lightning rod, thus answering another question in everybody's mind, I'm sure.

Finishing his job Perri straightened up.

"Now how do we get down from here?" he remarked.

(That's the question, all right. And will our three friends be able to escape unknown to the Eagle and his mate? Startling events are to come. You said it, kid.)

A guy from Singapore, Straits Settlements, writes in and wants to know the names of the two native girls who played in "Mutiny on the Bounty." Tsk, tsk. Whatever would he want of their names.

Stop that clamoring, fellows. Their names are Mamie Clarke and Maria Louisa. Their addresses? Just write in care of M-G-M Studios.

KNEE CAP REVIEWS

(No space left on my thumbnails)

"THE GREAT ZIEGFELD." Glorified version of the life of that clever showman, picture moves at a breathtaking pace in a kaleidoscopic montage of gorgeous girls and superb musical numbers. At last a musical with a place for every song and every song in its place. Cannot vouch for Bill Powell's performance being true to life, but can for its suavity and polished perfection. Luise Rainer captivating as the delightful minx, Anna Held, who divorced Ziegfeld in a temper and

later died of a broken heart. Myrna Loy scores again, as Billie Burke. In fact there's not a flaw in the entire cast. Photography by George Folsey, Karl Freund, Ray June, and Oliver Marsh is something at which to marvel.

"THE PRISONER OF SHARK ISLAND." A stomach full of crullers. But I won't say a thing against it. Everyone should see it. It's a beautiful plea against capital punishment, against the taking of human life by "law," no matter what the circumstances.

Warner Baxter as the tragic Dr. Samuel Mund, does a presentable job. John Carradine deserves especial mention for his work as the very heavy heavy. Bert Glennon in his photography captured the mood of the picture.

"THESE THREE." Emaculate version of splendid "The Children's Hour." Original by Lillian Hellman. Operation by the Hays Clinic. Not as good as the play, of course, but pic at least offers some neat characterizations. Best is by Bonita Granville, child actress who delineates a Mary Tilford who'll gnaw at your very vitals. Amelia Tilford and Lily Mortar as played by Alma Kruger and Catherine Doucet are sharply drawn. Miriam Hopkins has little to do. Merle Oberon and Joel McCrea are innocuously pleasant enough. Would say William Wyler extracted all possible from the devalitized script; and Gregg Toland photographed with a meticulous camera.

"FOLLOW THE FLEET." A dish of pleasant porridge featuring Fred (Jack-Be-Nimble) Astaire and Ginger (Twinkletoes) Rogers. A thousand compliments are theirs for a song. Film does a big service in introducing Harriet (Lovely-to-See) Hilliard, who is a newcomer that's a wow.

"WIFE VERSUS SECRETARY." Interesting treatment of an age-old problem; a problem much older than secretaries (who are usually 19). Gable plays part of uprising young executive who thinks of his beautiful secretary merely as an office appliance until gossip cuts a path for him to follow. Best boost for the director is that he makes you believe this in spite of fact sec is played by Jean Harlow. Anything in pants (masculine) that could stay in an office with J. H. for more than one day without becoming a jelly-like mass isn't human. Not even if he's married to Myrna Loy, who ain't nothing easy to resist, herself. Very pretty performances are chalked up for Gable, Loy, and Harlow, who are all exceptionally well modelled in lights by Ray June.

"DESIRE," among Marlene Dietrich, Gary Cooper, and John Halliday. Well directed, well acted, and well photographed, Cooper is somewhat over-coy in spot or two, but this detracts little from his excellent performance. As for Dietrich, she is at her best in "Desire." Don't fail to note clever way film eludes the censors and still gets over a seduction scene. Should be a B. O. success.

"MR. DEEDS GOES TO TOWN." Frank Capra goes to town for Columbia in a blaze of Gary Cooper. This is a hilarious piece of fun-making that should bring the customers in from near and far. With probable slight advance ballyhoo, this looks like a "sleeper." Tale is of a rubicund (Gary Cooper) who has a large fortune land in his lap. Rubicund goes to town, where the wolves set upon him. Rubicund neatly skins the wolves and ends up with a fur coat, thus greatly upsetting them all, including Jean Arthur, who is one of the wolves but repents in time for the fadeout. It may not be new, but it's never been done like this before. With Bob Riskin and Frank Capra sitting on the original egg by Clarence Budington Kelland, a scintillating and sparkling film was naturally hatched. Cooper gives a performance that is as full of understanding as a library on psychology. Space does not allow more than a word of praise for the glowing portrayals by George Bancroft, Lionel Stander, Douglas Dumbrille, Raymond Walburn, and all the others of a superb cast. Photography by Joseph Walker in keeping with the production.

Put this on your list of "musts."

PROGRESS NOTE

Lyons, McCormick, and Lyons, licensed agents, now number among their clients Mr. and Mrs. Oliva Dionne, who are listed as contract artists.

Getting things onto a production basis, as it were.

HOLLYWOODCUTS, by the Shovel Boys (They dish the dirt). * * * Irene Dunne is having more fun than King Edward's horse, planning her new home in Holmby Hills. She used to scoff at the idea she'd ever be interested in building her own place. Now she's running around with blue-prints



under her nails. * * * What well-known actor recently declined to show up at a beach party given for publicity purposes, because he was wearing sideburns and felt they wouldn't look well in a bathing suit! * * * There aren't many people in the country that can boast of having eaten bison. That really comes under the heading of rare cuts. But the 250 guests of Ken Maynard last month are now numbered among the initiates. Ken gave a buffalo barbecue in order to bring together his friends and members of the press, to show them his new ranch and circus wintering grounds in Van Nuys. It's pretty good stuff, too. Both the buffalo and the circus. * * * The Mayfair Club's social event of last month was a Print Mayfair. Not thus named because of the pictures in the papers. All the gals came in print dresses. Sort of misprints, you might say. The Florentine Room was decorated with hundreds of roses, and the floor was carpeted with imitation grass—until everyone tripped over it, and it all had to be taken up. * * *

Evalyn Knapp and her new husband, Dr. George A. Snyder, gave one of the earliest fishing parties of the season. * * * Cruising north in the morning in one of Bob Oefinger's boats, Evalyn's party encountered a huge stray whale near shore. I figured him for about a ninety footer, but I just looked it up to protect myself and find the largest known whale to have been eighty-nine feet long, so perhaps I'm wrong. This bird had hung around when the other robins flew north, to scrape the barnacles off his keel on the warm sands of California. * * * Smart whale. It's no fun scraping barnacles off on an ice-berg. Try it some time. * * * Evalyn and Paul Kelly vied with each other for top catch of sheep's-head. * * * Cute Lillian Emerson was along with her mother. Lillian spent more time eating sandwiches than catching fish. * * * Elsa Buchanan, English importation, was along too. And so was Elsa's kid sister, who was determined no one should mistreat the live bait, and so spent most of the day throwing minnows overboard and secreting the live crabs where they couldn't be found. * * *

The formal opening of the West Side Tennis Club commanded a turnout that looked like the lineup for a big premiere. But not a microphone was in sight. * * * Margaret Sullivan was there, busted wing and all. * * * So was Henry Fonda, Margaret's ex. * * * Also director "Willy" Wyler, Sullivan's ex No. 2. Quite an ex family gathering. Should I say this makes her another Madame X? * * * Errol Flynn and "Jinx" Falken went down to valiant defeat in a spirited exhibition match against Edward Burns and Peggy Stratford. * * * Lili Damita was very much among the audience, admiring hubby Errol's prowess, of which he has plenty. * * * James Stewart put in one of his rare social appearances, spending most of his time with Betty Furness. * * * Virginia Bruce there, a beauty in pastel as usual. She was accompanied by Ralph Lester, in case you care. * * * Also among those present were Ann Southern, Inez Courtney, Eddie Adams, Harriet Parsons, and little Marcia Mae Jones. More on the courts than off were Fredric March, one of filmdom's topnotch players; George Murphy and the Mrs. Jack Cummings; Elmer Griffin, President of the Club; and his wife, the former Edith Fitzgerald.

And a gal writes in begging to know if what she hears is true—that you have to have a pass to get into Hollywood!

You sure do, sister. And you have to come in riding on a white elephant and blowing a kazoo.

Oh, Miss Superstar—may I ask you just ONE thing—do you REALLY wear the Squeezbaum Girdle day and night?

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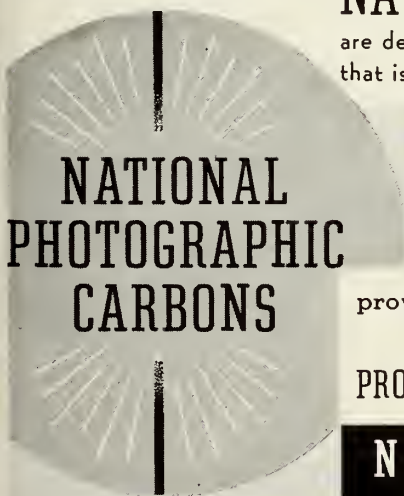
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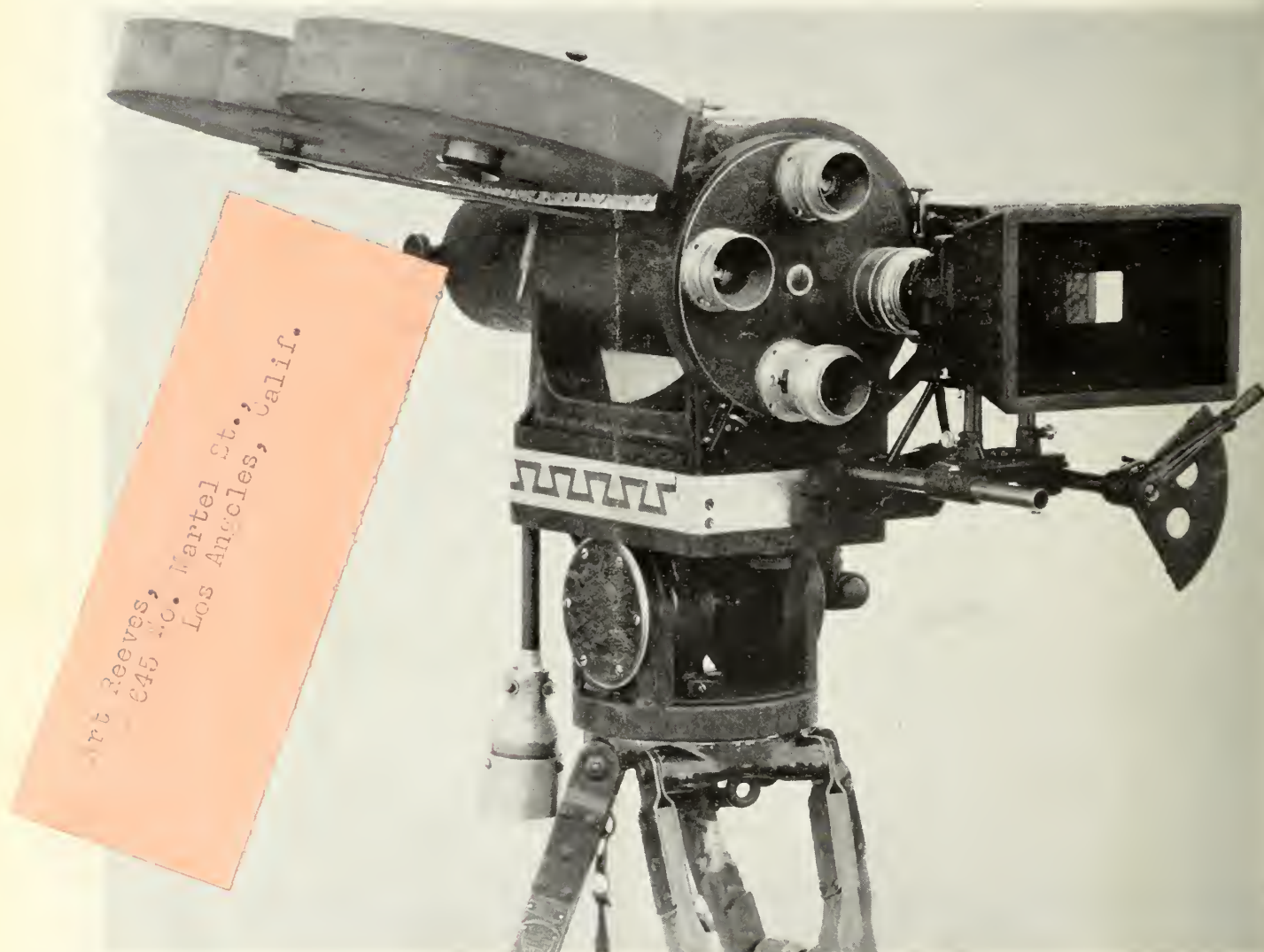
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INTERNATIONAL PHOTOGRAPHER

HOLLYWOOD

TH YEAR

JUNE, 1936

VOL. 8
No. 5



Here we have the two dog stars of "Two in Revolt," "Lightning," posed upon the rock, and "Malamule" below. The artist is Robert W. Coburn, still man of Local 659, and the director, Glen Tryon. It is a dog and horse picture, the horse being "Warrior," trained by Jack Lindell, and the dog trained by Earl Johnson. The producers are R.K.O., the locale near Flagstaff, Arizona. Our camera crew personnel includes Jack McKenzie, first cameraman and director of photography; Russell Metty, operative cameraman; Harold Wellman, assistant. John Arlidge and Louise Latimer were featured aside from the animal stars.

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INTERNATIONAL PHOTOGRAPHER

MOTION PICTURE ARTS AND CRAFTS

Vol. 8

HOLLYWOOD, JUNE, 1936

No. 5

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Insert painted in oil by Lewis W. Physioc

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COLOR



Our color symposium, if it may be so called, was a success; at least in the number of color "processes" and "systems" represented.



If our readers got nothing out of it except a general understanding of the making of natural color photographic print on paper, the magazine will be repaid for the effort.



Several processes were not available for exploitation until our July issue and, if engagements are kept, these will be worth waiting for. They are all Hollywood concerns and ready to go.



The International Photographer is grateful for co-operation extended, especially to Mr. Karl Barleben, F.R.P.S. and his associates in New York City and to THE JOURNAL OF THE ASSOCIATION OF CINE-TECHNICIANS, LONDON, ENGLAND; also to the Defender Chromatone Process (Photo Supply Company, Inc., Rochester); Arthur Maude, England; Lewis W. Physioc; Major Adrian B. Klein, M.B.E.; Dr. Reuben Higgins; Walter M. P. Batts, of New York; Walter H. Carson; William E. Celestin; Paul R. Harmer; Peter Mole; Hamilton Riddell; William Stull; Morgan Hill; W. T. Crespinel; Ross Fisher, Mexico City; Attorney Robert Fulwider; Robert Tobey; Projectionists' Journal, London; Earl Theisen; Arthur Reeves; Anthony Kornmann; Billy Boyce, and many others.



Random Thoughts On Natural Color Photography

By KARL A. BARLEBEN, JR., F.R.P.S.

THERE is no lack of color in photography—on the contrary, the trouble seems to be too many complications and too many processes capable of producing from mediocre to really good natural color. It is probable that the very numerous processes available give most of the trouble to the novice, for how is he to choose intelligently? Color in photography is not new. Fortunes have been spent—and made—in the frantic search for good and practical color processes. And many more will no doubt in the future be spent—and made. Not many seem to worry about third dimension, strangely enough, but color—ah, that is something everyone goes after in a big way. Possibly the fact that color is so elusive, and because we are so near, and yet so far, makes it all the more appealing to us. In any event, it can safely be said that 1936 has seen tremendous strides made in color photography.

If only some standards could be worked out, the whole thing could be simplified, but as it is, each process has its own methods and procedures, and it is doubtful if anyone can truthfully say that he knows all there is to know about color, or even about all the color processes. A strange fact is that a few of the first processes to be brought forth are still in existence and used a great deal, in spite of the fact that new and seemingly better processes have been brought to light since. It all looks like a mad scramble to see which process gets there first—and the race waxes hotter and hotter as the years go by.

Surely the time must come when some inventive genius will proclaim the discovery of the certain something that will place color in the front rank. To date, certain obstacles crop up to mar the perfect picture. If the process produces good color, it usually is impractical or too expensive to produce commercially. If it is satisfactory from the commercial standpoint, it usually is unsatisfactory from the technical point of view. However, the "bugs" in color are being rapidly ironed out as time goes on, and as I said previously, the time must come when we can really say "color is here."

Of the processes recognized today as satisfactory on one or more counts, we can count on the Agfa-color, Lumiere Autochrome Filmcolor, Defender Dufaycolor, Defender Chromatone, Finlay, Dufaycolor, Eastman Wash-off, Ruthenberg, etc. These, of course, are for still photography in the main. When it comes to movies, Technicolor, Bi-Pack, Dufaycolor and Kodachrome seem to hold their own. The Lord knows how many other obscure processes there are, many of them excellent, for all the public knows. In any event, there are sufficient processes to keep the amateur busy for many years.

Just which process to adopt is something I shouldn't care to suggest. Some favor one, others prefer another. It all amounts to personal preference

and the type of work intended. Aside from the various color processes in which the color is inherent in the film or plate, there are various so-called "one-shot" cameras coming out which seem to draw a great deal of attention. The Mikut (which I mentioned on its arrival in the United States a short time ago—see page 24 of the April 1936 issue of THE INTERNATIONAL PHOTOGRAPHER) is creating tremendous interest because of various novel and practical features. Then the Defender Photo Supply Company is, at this writing, completing plans for a "one-shot" camera to be exploited along with the Chromatone printing process. Many individuals have turned to the making of their own "one-shot" cameras, and a few are even making them on special order for sale. The "one-shot" camera uses ordinary panchromatic film and makes three negatives, each through a filter, simultaneously. From these three negatives, color prints are easily made via the Chromatone and other processes. Color films and plates, however, still hold their own. The Finlay, Agfa, Dufaycolor, and Lumiere Autochrome Filmcolor (which, incidentally, has been speeded up considerably only recently) are widely used by those who are content with transparencies.

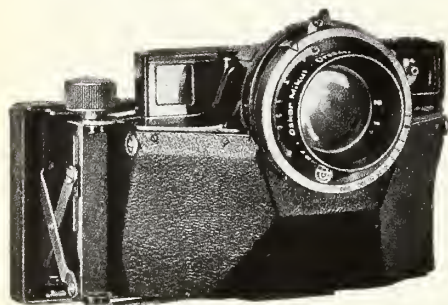
The novice in color photography must realize at the start that when taking up color he is best off if he disregards a few of the conventional black and white rules. Color is an entirely different medium, and it follows that its treatment is a bit different. First of all, scenes must be chosen for color. With a black and white picture, a scene may be drab and dreary, as far as color is concerned, and still make

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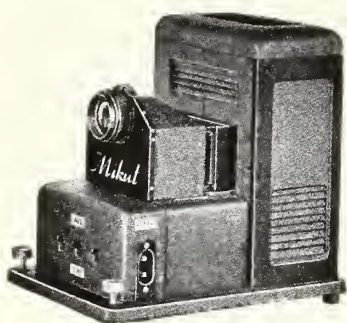
Cameraman Jack Alton likes his backgrounds tall and sharp. Here is one from Stamboul.

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CANDID COLOR—THE MIKUT COLOR SYSTEM

By HERBERT C. MCKAY

(Photo Marketing Corp., New York City)



HE rapid increase in interest in natural color has made it imperative that color should be reduced to the technical level of black and white. While this may seem to be a wild dream, the fact is that great strides have already been made toward this desirable goal.

Less than a year ago the color photographer was forced to make a most unsatisfactory choice. He had to make use of mosaic screen plates or films with their consequent unsatisfactory reproduction or he had to limit himself to an unwieldy one-camera which could only be used in the studio or under the most favorable exterior conditions. The spirit of modern photography which has arisen under the influence of the candid camera and the speed flash was an absolutely closed field to him.

Although a factor of not too great importance in the professional field, operating expenses were extremely high. With flash shots using as many as one hundred and even more bulbs at a single shot, the cost of an exposure was staggering. All in all, the restrictions surrounding color photography have made it impossible for the casual photographer to indulge in this most fascinating branch of the art.

These conditions have been overcome. It is now possible to obtain a one-shot camera which weighs less than three pounds, which is capable of producing 8x10 inch color prints on paper from negatives made at speeds as high as 1/50 second. The restricted size and weight make the camera perfectly practical for free-hand use; the standard Compur is perfectly adapted to flash synchronization and the lens speed is such that two medium bulbs at five or six feet will give good results!

Another phase of color work which has been radically changed recently is the production of color proofs. Until recently it has been necessary to make a composite print to show the result which will be obtained from the set of separation negatives. If done hurriedly, this proof was worse than nothing at all, and if well made it demanded the expenditure of time and money.

At the present time it is possible to prepare color proofs within the space of a half hour and at a cost of less than ten cents each. These proofs are examined by projection to any desired size up to eight or ten feet square, thus giving ample opportu-

ity for examination and choice by a group rather than by one individual at a time.

These radical changes and simplifications of color routine have been brought about by a recently introduced process known as the Mikut Color System. The word "system" is used advisedly because the camera, as such, is incidental to the entire working system.

Briefly the system involves the production of a three-color separation set of negatives, each measuring 45 mm. square and situated side by side on a 50x150 mm. glass plate. Inter-registration is fixed, as the images cannot move relatively to each other. From this negative a black and white positive transparency is made. This positive is exactly similar to the conventional glass lantern slide and made in the same way. The only difference between making the Mikut transparency and an ordinary slide is that the exposure given the three separate images is under control so that the balance of the color records may be altered.

The transparency is used with a special triple projector, and by the application of conventional additive methods, a superimposed, composite color image is projected. The optical method used for combining the three distinct color records in projection is closely similar to that used in the camera for dividing the original image into three parts for separation recording.

When the pose has been selected to reproduce as a paper print, the projector is converted into an enlarger by substituting a low intensity, diffused light source and by placing the projector head upon a special enlarging bed which enforces parallelism between negative and easel. As colors are not desirable in the image for projection printing, the filters are removed from the lantern for this purpose.

The easel bears a paper holder which has a metal masking frame and which is equipped with registration pins. The negative image is focussed upon a sheet of plain paper, supported in this holder. The images are superimposed and sharply focussed. The individual lamps of the projector are then extinguished by their separate control switches. A sheet of sensitive paper is punched to fit the register pins, a special punch being provided for this purpose. The paper is placed in the holder and the

(Turn to Page 24)

Arthur Maude On Color

An interview with George H. Elvin

(Secretary, The Association of Cine-Technicians)

Reprinted from the Projectionists' Journal, London, England.

An outstanding feature of A.C.T.'s recent colour evening, in which five leading technicians demonstrated and talked about five of the leading colour processes, was Mr. Arthur Maude's talk on his extensive experiences and his advice and opinions on the technicalities of colour.

Mr. Maude was a colour expert on Technicolor and received the Reisenfeld Gold Medal, by an overwhelming vote of American exhibitors, for his colour picture, "The Vision." In this picture, it has been said that the ideal and most artistic effects were secured by making colour a pleasing adjunct rather than the predominant feature of the film.

In an interview for this Journal, Mr. Maude talked particularly of the Debie Colour Process, in relation to the all important factors of cost and lighting.

Debie Colour Process

The Debie Colour Process, financed by Mr. Debie, is called Dascolour. Patents were first taken out in 1931 and have been worked on ever since. It has taken four years' continuous work to perfect the print. Mr. Arthur Maude is so enamoured with the process that, together with his partner, Mr. Arthur Cross, he has taken out an option for the British Empire and has the first refusal for the United States of America.

The quality of the process and its low cost are its main attractions. Speed of printing should make the process additionally welcome to newsreel companies.

No special camera is needed for the process, as it is possible to adapt an existing model at a cost of seventy pounds. The only additions necessary are a double spool box and a double negative. Debies, however, made a special camera which will be available shortly.

As a rule, bi-pack processes take double the time and to overcome this a double printer has been invented which takes the same processing time as ordinary black and white. The cost is only an additional five percent. The prints cost only one-fifth of a penny more than black and white.

In emphasizing that the element of cost is vital, Mr. Maude pointed out that a three-colour system costs one-third more. While admitting that there are moments when a three-colour system may be necessary—for example, the photography of Royal Robes—as a general rule two colours only are sufficient. A forest can be photographed in two colours when it is remembered that the component colours of green are yellow and blue. Ninety percent of stage work needs but two colours. Why should film need more?

Lighting

The essence of colour photography is lighting and entirely different treatment is required from that for

black and white. Colour must be clearly defined. An excessive front light is not required and no extra power than for ordinary black and white photography is necessary.

Fringing of colours must, however, be safeguarded against. A human being has two eyes with which to select his vision. A camera has only one lens and is therefore more restricted than the eye. In brilliant sunshine, for example, red must be fringing and, in case of a sunset at sea, the sea would appear red to the camera, although we know it is not so. We must have a light or lights behind the object in order to kill this fringing. For this reason it is vital that the colour expert—the cameraman—should be with the scenic designer when the sets are being designed. Natural sources only—doors, windows, etc.—should be used to obviate fringing.

Back lighting can make a stereoscopic effect in colour with twice the ease of black and white, but it is essential that the scenery must not be painted or wall papered in certain colours or lack of colours. Darkish grey panelling, or any dark shade, will help obtain a stereoscopic effect. The proper effect is obtained by turning the front lights as much as possible off the scenery. Lighting should be reflected light and not direct light. Any object which it is desired to emphasize should be lighted separately by spots.

In this new art of colour pictures long shots are of necessity not quite so bright as foreground shots, because the light is so much further away. Therefore, it is essential that in mid and foreground the light on the colours must be entirely different from that on the face. There must be two sources of light for mid shots and the colours will then correspond in density to the colours in long shot.

Finally, it must be emphasized that it is essential to forget that we are shooting colour once the colour scheme has been devised. Every costume worn, whether for modern or costume play, must be calculated according to the foreground and close-up shots required.

As far as possible there should be only one salient point of colour in each foreground shot. Costumes or clothing of other persons should be chosen to blend with that one salient point.

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Color Photography Through The Painter's Eyes

By LEWIS W. PHYSIOC

Technical Editor International Photographer

THE writer frequently has been asked to give his opinions on the important subject of color photography. Up to the present time he has refrained—for several reasons. First: because he believes that opinions are of less benefit to mankind than axiomatic conclusions. Second; an expression of opinions entails the use of that old personal pronoun so generally obnoxious. More dreadful, still, he trembles at the thought of opposing the opinions of those who are recognized as authorities. This is admittedly the case, as regards the present subject.

Many of my color-minded friends have suspected me of lacking interest in color photography. This is true only in the matter of the two-color processes. This confession does not mean that I lack appreciation for the efforts of those who have so patiently and courageously experimented in the application of color to the motion pictures: and I concede many striking effects in those experiments. It means, merely, that one who has enjoyed the delights of the unlimited range of the painter's palette could not fully be satisfied with the renderings of a two-color system.

I have been a color-photo enthusiast from the first introduction of the Autochrome, and other color plates. I still pour over the pages of the Geographic Magazine, whose particular appeal is in those color plates. They have taught me one outstanding fact; i.e., the success of each subject depends upon the ability of the **artist** behind the camera: It is **choice** of the subject. Even after the completion of a series, there is still another choice to determine which among the group fully satisfies the demands of the artistic taste for color. One needs but look into the rack of discards to realize this fact.

This suggests a string of questions, opinions and stock phrases we so frequently hear regarding color photography—"pastel shades"; "colors as seen in nature"; "gaudy colors that tire the eyes"; "art directors and color theorists running wild," and the like.

Let us study these questions.

It would seem that the very thought of color photography would encourage the employment of the trained artist (or color expert); but the general criticism and comments tend to show that color-pictures appeal to the vast public and not to the minor group of art enthusiasts. This, in turn, throws the subject into an all-time controversial field. Many works of art that have enjoyed a wide popular approval have been less favored by academicians and art critics; and, conversely, those works more loudly acclaimed by the critics have been coldly accepted by the public.

Then, the question arises—What is art? Is it something that appeals to the great mass of lay minds, or that which is approved by the trained artist or critic, or is it represented only in those rare productions that satisfy not only the masses but elicits, also, the praise of the critic? If this latter clause suggests the answer—we, indeed, set a high mark for color photography.

We frequently hear the comment: "Color pictures will never be a success until they can produce those soft, "pastel shades." This term "pastel shades" means nothing to the artist. His every color scheme is the result of some design, some instinctive response he cannot define. Every time he takes up his palette those pigments upon it yield to a variety of tints that bear no name except in the abstract tongue of that artistic instinct. Those tints may range from a series of delicate, high-key hues of soft grays (pastels, if you wish) to bold, rich, positive tones. Has either any value over the other? They are both the result of that instinctive direction.

The term "pastel" has been popularized by the sheer beauty of that particular medium—the velvety surface and softness of line and texture. Unlike oils or wash, pastels are not mixed on the palette from the primaries; they are made in series of hues, ranging from the full value of the primary to its most delicate suggestions. The artist conveniently selects the hue most nearly approaching the dictates of his instinct. But these hues have been mixed by the **trained expert**, and are judiciously tempered with delicate grays, to relieve the garish effects likely to result from tints mixed by students that do not fully understand color harmony.

Gaudy Colors That Tire The Eyes

I do not believe there is any pair of eyes that tires of a pretty color scheme—certainly not mine. On the contrary, my eyes refuse anything that is not agreeable in the matter of color. I am looking for color in everything, at all times.

I readily admit, however, that it is easy to tire of a succession of effects rendered by the raw primaries or the two complements unrelieved by secondary and tertiary tints as furnished in the full spectrum. Hence my lack of interest in a two-color process.

Colors As Seen In Nature

There are some features of this heading that overlap the preceding, as well as the following "Artists Running Wild."

The producers have been criticised for an unnatural extravagance in color schemes. This is merely a prejudicial hangover from the two-color systems that rendered a preponderance of the two complements employed—(red and green) or (orange and blue).



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Here is a shot of natives at Balak, Sumatra, by Lewis W. Physioc. The strange buildings are storehouses for rice. The natives in the picture are beating an alarm drum.



In considering this criticism we cannot refrain from a defense of those who have striven so earnestly in the two-color efforts, particularly Mrs. Natalie Kalmus who grew up with the color pictures. Mrs. Kalmus has had considerable experience, and there is little doubt but that the best results of the Technicolor two-color process were due to her taste and training in color harmony plus her knowledge of the limits of any two-color system. The best proof of this is their persistent efforts for a three-color process.

The other systems, like Multicolor, and particularly the additive systems, are subject to the same criticism, but claim the same defense, **the limits of any two-color system.**

However, we hope Mrs. Kalmus, and the other experts, will not be too much influenced by the demands for naturalness—there are many reasons.

I have no fanatical belief that everything in nature is beautiful. Dame Nature is a lady of many moods, otherwise she would not be so intriguing. Art is dependent upon catching her in her most fascinating moods. John Ruskin said something to the effect that if the artist always painted Nature as he saw her he would sell few of his pictures. And the portrait painter and photographer will tell you that if they rendered their patrons "true to life" they would enjoy few commissions.

Artists have gone sketching, and wandered for days without finding a fit subject for reproducing. Returning, disconsolate, one may come upon one of those rejected subjects and become startled into enthusiasm. The commonplace scene now appears under different lighting and atmospheric conditions and is transformed into an inspiring subject.

But even now, the artist feels impelled to alter the drawing here and there, and modify certain tones; generally idealizing an already attractive subject.

To be sure, nature is sometimes lavish in her offerings and there are occasions when the artist finds it difficult to find anything on his palette to match the brilliance of the color scheme before him. Here lies the fascination of still-life subjects, such as flowers and fruit.

But I have never heard of anyone becoming tired of looking at flowers, nature's "gaudiest" color display.

This fickleness of nature seems to suggest that if the producers of color pictures go out to nature and

shoot from morning till night, without the aid and guidance of the artist, they will meet with many disappointments. And any process that does not permit of the artist's aid will not be a permanent success—The **true artist** seldom "runs wild."

Technicolor (three-color)

When I first beheld one of the "Silly Symphonies" I was thrilled—my emotions were almost childishly respondent. I recognized the artist's influence; except that instead of merely making an artistic choice of one of nature's offerings, the subject was created by the artist. My ideas of color were fully satisfied. Furthermore, it seemed to prove that the system was capable of properly reproducing a good color scheme.

I experienced the same delight in viewing "Becky Sharpe"; and I refuse to be influenced by the "pastel patrons," or "true to nature" fanatics. I love pretty costumes and appropriately designed backgrounds. I like women dolled up and made up. I love **color.**

I recognized some technical difficulties such as matching the closeups and long shots. But such errors are found in the best black and white pictures. This will be overcome when the technicians gradually realize that every change of light and variation in exposures means as great a variety of color values. This error in matching closeups and long shots seems less noticeable on exteriors for the very reason that the cameramen cannot haul in old Sol twenty-five million miles, or so nearer, when making the closeups.

It must be realized that there are many subjects that, while not offering much in the way of color, are beautiful when rendered in black and white: This is because the features of that subject may be a striking light effect, a happy distribution of tones and other elements not particularly represented in the distribution of color values. Therefore, if I must choose between dingy reds, dusty greens, neutral grays, faded blues and other indifferent tones (as too frequently found in nature) and the black and white, I'll take the latter.

But as there is no question but that the artistic cameraman can come to nature's aid in the black and white, we can likewise hope for success in color photography by permitting the artist or color expert to contribute his peculiar training.

The Gasparcolor Process

(Reprinted from the *Projectionists' Journal*, London, England)

By MAJOR ADRIAN B. KLEIN, M.B.E.

(Technical Adviser to Gasparcolor Ltd.)

From the *Journal of the Association of Cine-Technicians*, London, England

THE experiments of the last twenty years have at length resulted in more than one process which can claim full-scale color reproduction and which fulfills the practical conditions of price, processing and projection. One of these processes is already familiar to all of us, namely, the recently perfected three-color Technicolor film. Very beautiful work has already been shown and a lot more is on the way.

The most recent color process to make its debut is known as GASPARCOLOR. A great deal is likely to be heard of Gasparcolor film in the immediate future. It is therefore important to know what it is like and how it is made.

To begin at the end—Gasparcolor film is a color film giving accurate reproduction of all colors and ready to go into any projector anywhere without any addition to the projector; and without any departure from standard black and white practice.

It is hardly necessary to state that in all color photography one has to analyze the light coming from the object to be photographed. In other words, we have to obtain negatives which record limited wave-length bands in the whole range of visible light known as the spectrum.

For this purpose we can divide the spectrum into two regions, or into three. Two records can only give us a comparatively limited reproduction of the original colors. But owing to the nature of color vision it is possible to reproduce every color from the mixture of the varying proportions of the three colors. These three are the so-called primary colors—Red, Green, Violet. It is essential, therefore, in order to reproduce all colors as seen by the eye, that three photographic records should be obtained; the first being taken through an appropriate red filter, the second through a green filter, and the third through a blue filter (or violet, as it is generally called.) In a three-color cinematographic process it is necessary to take all three pictures simultaneously. This can be accomplished in several different ways. We can employ a special camera, in which a prism system is used behind the lens to divide the beam so that more than one identical image can be obtained on more than one gate. It is usual on such cameras to have two gates, one at right angles to the other. In one gate we expose a single film and in the other we expose two films, one behind the other (known as bi-pack). It is possible with such an arrangement to get a record of the blue light on the single film, of the green light from the front film of the bi-pack, and of the green light on the rear film of the bi-pack. When developed in the usual way, we have thus obtained three geometrically identical films, but each will represent a record of the subject in terms of one of the primary colors. Such a system is used by Technicolor and also by Gasparcolor for the photography of negatives. Naturally, if the subject is still, as in the case of cartoon photography or trick work, it is possible to photograph the pictures all on to one film. In this case it

is only necessary to alter the color filters successively and to take three frames of each shot; one through red, one through green and one through blue. But no matter how the three negatives are obtained—what is important is how they are going to be printed on the final positive film. Here it is that the processes differ from each other fundamentally.

Gasparcolor is the first color film positive material upon which the three negatives may be directly printed each in its own appropriate color. For the first time, no dyes are used in the processing, no staining, coloring or toning enters into the treatment of the film. This sounds like a miracle, and in one sense it certainly is a miracle. Yet the principle is simple. Imagine three colored emulsions. That is, emulsions which contain transparent dyes in suspension in the gelatine. These emulsions are coated on the celluloid in layers in the following order. On one side of the film we have the pink, and beneath the pink layer a yellow layer. On the other side of the film is coated a blue layer. Now these emulsions are so sensitized that we can print them with colored lights each in turn, independently of the other.

The layers are sensitized in the following manner: The pink layer is sensitive to the blue light only, but the yellow layer underneath is sensitive to red light also. The blue layer is blue sensitive only. By printing the three layers with colored lights it is possible to print the film three times upon the three layers independently of each other. The film which is to print the pink layer is printed with blue light, but as the yellow layer lying beneath will not admit the blue rays, nothing from this negative is recorded on any layer except the uppermost pink layer. Next, the yellow layer is printed with red light, but as the uppermost pink layer is not sensitive to red light nothing is printed upon this layer, whereas the yellow layer lying underneath the pink layer is sensitive to red light. It therefore records the red light. Finally, the blue layer (which is blue sensitive) on the other side of the film is printed with the third film, using white or blue light. Obviously only blue light can get through the blue coating and no blue light can enter the yellow emulsion lying beneath. Thus the three layers can be separately printed with-

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out the slightest danger of printing more than one layer at a time.

The three printings can be done on a single printing machine as fast as normal black and white.

The subsequent development of the film differs in minor respects from black and white, but normal processing machinery is employed.

The claims of the Gasparcolor process are:

(1) It is three color film and therefore gives perfect reproduction of the whole range of color.

(2) It is photographically produced print and does not rely upon dyes, color toning or chemical treatment for the color.

(3) It is accurately reproducible by standard normal photographic practice and almost standard processing equipment, whereas other color processes require specially equipped processing laboratories.

(4) It is as transparent as black and white film and requires no more than the usual illumination for projection. It is virtually a grainless pure color image.

(5) No addition of any kind is required to the projector. It can be exhibited anywhere at any time in any projector.

(6) It does not show scratches more than black and white film.

(7) Sound track is black on a transparent red background giving normal results.

Gasparcolor film is double coated and projection-

ists very generally have been of the opinion that it is difficult to focus double coated color films. This opinion is based on an accurate observation, but the cause of the difficulty does not lie in the fact of the film being double coated. First of all, previous processes have not had sharp pictures to focus. That the double coated film cannot be the cause is shown by the fact that the distance apart of the blue image and the red-yellow image is, at the most, four and a half thousandths of an inch. Now, assuming a projection distance of 100 feet and a four-inch lens focus, the distance apart of the sharp projected pictures could not be more than one and a half inches. Therefore, it is absurd to blame the double coating of the film.

The sound track of Gasparcolor, having a red background, it may be found advisable to increase the volume by one or two steps. Naturally it is impracticable to use non-red-sensitive photo-electric cells.

The question of the color characteristics of the illuminant in relation to the projection of a color film involves too many factors to be discussed in this brief description; but this aspect is really very important and it will have to be taken into consideration by both the producer and exhibitor of color films. A large difference in the color temperature of the light source can cause a tremendous difference in the appearance of the colors upon the screen.



BY MAURICE POIRIER.

INVENTOR

POIRIERCOLOR

Color plates of this process are made from one image in four parts. One part is black and white and is a complete image in every detail. The other three parts are each a part of the black and white image, but in color value they differ and each takes on one of the primary colors—practically eliminating the rest of the image.

Negatives exposed into four images of whatever subject chosen, either still or moving objects. One image is black and white without color value, and a good sharp negative, but the other three are in some respects incomplete; that is to say, for illustration, the negative which is meant to register the red component will register the whole image, but only the red part of the subject will be sharp; the rest of the image or subject, which consists of black and white and other colors, will be registered with less degree of sharpness. To continue explanation, the parts meant to register the blue and yellow components are showing the same results as that of the

red; the blue part of the subject is sharp and the rest of the image is dull. The yellow is the same as the red and the blue.

Now in making positives on zinc or on to other materials for the purpose of printing color, or in making positives on films for projecting in color, we find this process somewhat different from most of the color processes. When positives are made from colored negatives, on zinc, or on film, the part of the image that is not sharp disappears almost entirely, eliminating all hand etchings.

Our camera used for color photography is not complicated. Of course, it must have extremely fast lenses, but does not require any reflectors of any kind, nor is the lens covered with any colored filters at any time. There is nothing in the path of light to interrupt its speed toward film to be exposed. White light only strikes films giving even exposures of the four images, or in reality one image in four parts, black and white, the red, the yellow and the blue. It may be difficult to understand how this is done because there are things that cannot be written and, if I were to enter the subject, it would require too much space saying nothing of what has been said about color photography by others. However, I am glad to send my contribution and hope it will be of interest to readers.

My associates in this business are Joseph C. Lamb, 1057 No. Tujunga Ave., Burbank, California and Dr. Reuben Higgins, 1442 No. Keystone St., Burbank, California. All information regarding this may be had by communicating with Dr. Reuben Higgins.



(Associate Editor
International
Photographer)

Notes On The History Of Color In Motion Pictures

By EARL THEISEN

; Mrs. D. W. Griffith), Stella Rogers (Mrs. LeSaint), and others. Murdock MacQuarrie was character man.

The interior sets were shot in the sunlight without diffusers in order to get enough light for the slow lenses and raw-stock of that period.

* * *

The projection speed of Kinemacolor was 32 frames a second, using beater movements which almost shook the theaters down. The flicker of the alternating colors and color fringe of this additive process was disliked by many persons.

* * *

The American Kinemacolor went out of business about the time of the war.

* * *

The first commercially successful process in which the color was applied directly to the film (subtractive process) was the Prizma perfected by William VD. Kelley. Using this process J. Stuart Blackton made a five reel dramatic feature in England entitled "The Glorious Adventure," released on April 30, 1922. In the cast among others were Lady Diana Manners and Victor McLaglen.

* * *

Before this Kelley, who is recognized by color experts as the foremost pioneer in color motion pictures, established a laboratory at 1586 E. Seventeenth Street, Brooklyn, New York, in 1913-14 and with the aid of J. A. Wohl, Max Mayer, Charles Raleigh and George P. Kelley (later Julius Lichtenstein replaced Wohl and Mayer) formed a company and experimented on a process known as "Panchromotion," an additive color, which was incorporated as "Prizma" in 1916.

* * *

Kelley's first experiments were with a four color additive system which was first publicly demonstrated at the Metropolitan Museum in New York in 1917. According to records compiled by Kelley for me, another showing was given at the Smithsonian Institution, on April 16, 1917, after which public showings were given at the Strand Theater in New York. At this same time experimental demonstrations were given after the regular shows of a subtractive process in which the color wheel which until this time had been used was eliminated. The additive color filters were dyed on the film.

The first feature length showing of Prizma color, in which the color filters were applied directly to the film, in which alternate frames were colored for additive projection, was a seven reel film entitled "Our Navy," released on June 23, 1918 for a two weeks show at the 44th Street Theatre, New York.

About this time Kelley began experimentation with the first subtractive motion picture process. In order to carry out his researches, he entered into a partnership with Carroll H. Dunning and Wilson Saulsbury, and a laboratory was opened at 205 West 40th Street, New York City, under the name of "Kestadacolor." The first film was a fifty foot subject of the

SINCE the box-office is becoming color-minded and Hollywood is willing to pay for color, it is fitting that we pause a moment to look back on some of the pioneering attempts to achieve color films and to bring them to their present perfection.

Throughout the course of motion picture history the desire of its pioneers has been to broaden the scope of the camera by adding to it the ability to record color and to catch the everchanging flow and tapestry of nature's coloration, thus improving the screen with a truer and more dramatic picture.

Edison wanted to color his films. As early as 1894 he hand-colored some of his forty-foot films for the Peep-show.

* * *

In the Los Angeles museum I have a specimen of hand-colored film made by E. H. Amet in 1898. It is a picture of the flag and was made as a propaganda film during the Spanish-American War. Because it is the earliest colored film which I could locate for the Society of Motion Picture Engineers' Historical Collection, this fragment of film is bound between glass for preservation. Many hand-colored films made by Pathe, Gaumont and others, before 1910, are on display in the motion picture gallery.

* * *

A program of Madison Square Garden, dated December 11, 1909, announces the first showing of Kinemacolor in the United States. This rare piece of memorabilia was located in Hawaii by Dr. William A. Bryan and through the enterprise of Charles Urban, Kinemacolor, was brought to this country and may be seen by visitors to the museum.

* * *

Wally Clendenin, the walking movie encyclopedia recalls that the first Los Angeles showing of Kinemacolor was the roadshow of the Durbar picture exhibited at the Trinity Auditorium, in 1910. Later it was shown in regular movie house in Venice.

* * *

Tally's theater, in Los Angeles, became known for a time as the "Kinemacolor," running nothing but color subjects. After Tally discontinued the color films, "Clune's Broadway" exhibited Kinemacolor for awhile.

* * *

Kinemacolor established a Hollywood studio in 1912 taking over the "Harry Revier lot" which was located at the junction of Sunset and Hollywood Boulevards. Later it had a studio at the "Fine Arts lot," having as director E. J. LeSaint. The leading ladies were Mabel Van Buren, Linda Arvidson (Then

American flag. It was shown simultaneously at the Roxy and Rialto Theatres, on September 12, 1918. The film cost the theatre a dollar a foot.

A trial showing of a full length subject, "White Horse Rapids" was shown in December, 1918.

* * *

The only medal ever issued by the Society of Motion Picture Engineers was presented to Kelley on October 13, 1919 "for achievement in color motion pictures."

* * *

A few of Kelley's achievements and activities were: Sixty-one patents on color; experimentation which led to the development of bi-pack began in 1929; developed an imbibition process known as "Kelley-color" in 1924 and formed Kelley Color Company with Max Handscheigl in 1926, which sold to Harris Color in 1928; developed a stereoscopic novelty in 1923; a colored animated cartoon series in collaboration with Pinto Colvig in 1919; and so forth. "Bill" Kelley died September 30, 1934.

* * *

While Kinemacolor was a two color additive process, Leon Gaumont introduced a three-color process called the "trichrome" with a public demonstration at the Gaumont Palace, in 1912. This exhibition was the result of several years' work and was considered an innovation because of the three color reproduction.

* * *

In 1917 Leon Douglas, of Berkeley, California, made some tests on an additive color process at the Lasky Studio. He photographed at 24 frames. A demonstration reel was shown at Tally's Kinema and a feature length picture of five reels entitled "Cupid's Angling," featuring Ruth Roland was made.

* * *

The Eastman laboratories began work on "Kodachrome" in 1914. In this process a two coated negative with a red sensitive emulsion on one side and a green sensitive emulsion on the opposite side were exposed and then the negative was reversed and dye toned. The dye application was made by winding the film over a rubber coated drum which was then inflated to prevent the dye solution from carrying over to the opposite side. Both sides were so treated.

* * *

Eastman introduced the 16mm Kodachrome of the Mannes and Godowsky process about August, 1934. The 16mm Kodacolor process, an adaptation of the Keller-Dorian line screen system, was introduced by Eastman in 1928.

* * *

The Keller-Dorian process was patented in 1908-

09 and introduced in 1925, although Paramount had been experimenting with this process for some time in the East, during March, 1935, Dr. N. M. LaPorte and Farciot Edouart began researches at the Hollywood Paramount Studio.

In this process the color is photographed by a banded tri-color filter associated with the camera lens and the film support in embossed with lines. A similar filter arrangement is used in projection.

* * *

Multicolor, a two color subtractive color process utilizing bipack for negative making was introduced in 1929. A somewhat similar system was introduced as Magnacolor by Consolidated Film Industries a year later. Harris-color, a single emulsion system was introduced in 1929. Morgana Color, a 16mm process, was introduced by Bell and Howell in 1932. Photocolor using a double coated film and dye images was introduced in 1930 and Sennetcolor, a somewhat similar process, was introduced a year later. Vitacolor, a process similar to kinemacolor was introduced in 1930.

* * *

Raycol, an English system using quarter size frames was introduced in 1930. Sirius, among other processes, was introduced in Germany in 1929. The negatives were made by a beam splitter.

* * *

Carroll and Dodge Dunning made a commercial subject for Del Monte in 16mm in which the two color subtractive film also had sound on the same film. Six prints were supplied the California Packing Corporation during the winter of 1933-34. Adding sound to color on 16mm film was considered an innovation at this time.

* * *

Technicolor, which has developed the present three color system and which is responsible more than any other company or individual for the popular acceptance of color, was organized in 1915 in Boston. A group of trained men consisting of D. F. Comstock, H. T. Kalmus, and W. B. Wescott began work on a subtractive system in 1914. Three years later in the winter of 1916-17, they demonstrated and publicly showed a additive picture entitled, "The Gulf Between." This picture while not a great success, gave the company much added impetus. Shortly thereafter they undertook to perfect a subtractive two-color system from which was developed the color process used in "Toll of The Sea," released December 3, 1922. Several outstanding pictures were subsequently made in this color including "Black Pirate," "Wanderer of the Wasteland" and millions of feet of musicals and other films prior to the obsequies of two color processes in 1930.

* * *

The first sound and color film, according to J. A. Ball head of the technical research for Technicolor, was deMille's "King of Kings."

Experimentation on the three color imbibition process now in use began in 1925 with J. A. Ball in charge of developments. The first showing of this color in a real-life picture was a short sequence in the M.G.M. film, "Cat and The Fiddle." The first complete color subject was the single reel film, "La Cucaracha," released on November 15, 1934, at the R.K.O.-Hillstreet Theater, Los Angeles, and the first complete feature length film was "Becky Sharpe."



J. A. Ball may be largely credited with technical perfection of the three color process.

(Turn to Page 24)

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A New Type of Background Projector



The Photo is that of George J. Teague and his dachshund, Mata Hari, on set at General Service Studio during production of Walter Wanger's, "The Case Against Mrs. Ames," photographed by Lucien Andriot. Background is of San Francisco Bay, the locale of the story being in that city.

Mr. Teague is again installing background process equipment in England and in the new film "Hollywood" of U. S. S. R. While abroad he intends to have the Carl Zeiss Laboratory construct special optical equipment to be embodied in a radically new type of background projector, which will be placed in production upon his return to Hollywood.

The New Max Factor Technicolor Make-Up

By NANCY SMITH

FROM the cameraman's viewpoint the new Technicolor make-up recently perfected by Max Factor is one of the most important developments of the year.

Successfully demonstrated in such productions as "Trail of the Lonesome Pine," "Dancing Pirate," and "The Garden of Allah," the unique preparation is the result of years of experimentation on the part of Max Factor, in cooperation with the Technicolor Corporation.

Over 20,000 feet of film were used in extensive tests with every type of beauty known to pictures before the make-up was pronounced ready for use.

Then, in sample form, it was offered to such artists as Katharine Hepburn, Ginger Rogers, Henry Fonda, Fred MacMurray and William Powell, all of whom were most pleased with the appearance and feeling of the new preparation.

Because it is more light-reflecting than the foundation make-up now in general use, the Technicolor preparation requires four times less light and will save the studios hundreds of dollars in electricity bills. The comfort to the stars resulting from the lessened light and heat is another major benefit of the new make-up.

Although perfected for use in color pictures, it is just as successful in black and white photography. Tests were made with Dupont, Agfa, and Eastman film, and it registered perfectly with all.

In consistency, it differs from all other make-ups in being vastly thinner than grease-paint. Consequently it makes for greater naturalness in photography, and removes the possibility of a pasty, made-up appearance.

Foreign countries, following Hollywood in a rush for color pictures, have swamped the Factor plant with orders for the Technicolor make-up. Alexander Korda cabled to Hollywood for 8,000 items—the largest make-up order ever shipped abroad. Representatives of the Korda production unit, visiting in Hollywood, spent two days at the Factor plant watching tests of the preparation before ordering it for "Lawrence of Arabia," now being filmed in Technicolor.

A Japanese picture actress, Miss Sachiko Chiba, visited Mr. Factor's laboratories with her personal cameraman, Harry Mimura. Under an interesting arrangement current in Japan, Mimura doubles as Miss Chiba's make-up artist—and they wished to study both black-and-white and Technicolor make-ups under the tutelage of the Hollywood veteran.

"All Japan want color pictures," said Mimura. "We are spending millions of yen in research and experiment, and hope to have color fully developed in a short time."

Both Mimura and Miss Chiba were surprised and delighted with the much more realistic effects it is possible to obtain with the new make-up—in both black-and-white, and Technicolor photography.

A New Lumiere Filmcolor

By WALTER M. P. BATTS

R. J. Fitzsimons Corporation, 75 Fifth Avenue, New York City



NEW Lumiere Filmcolor has just been placed on the American market. This product is five times faster than the Filmcolor previously manufactured and will permit snapshots of 12 times that which would be given for a Weston plate speed of 8, or 12 times the exposure for a plate of 17 Scheiner. The same filters are used that have been recommended in the past, and the same developing technique is employed.

The emulsion which is used on the Lumiere Filmcolor (which is a flat film only) is the same emulsion that was used on the old Autochrome plate, with the exception of its increased speed. This emulsion is entirely free from all mechanical and technical defects, and will give brilliant results. The starch grains of which the starch grain screen is composed, are so minute they cannot be seen with the naked eye.

The Filmcolor process of direct color photography is very simple, and a finished color picture, exactly true to the original subject, can be obtained in about 15 minutes, after exposure. Special filters are necessary for the various types of illumination. There is a Daylight filter for daylight use, a Perchlora filter for white nitrogen bulbs, and a filter known as the Juniphot for photo flood lamps. Any plate camera may be used for this work, and the films will fit into any of the standard cut film sheaths.

For any open landscape in bright sunlight we suggest an exposure of about 1/15th of a second at F4.5. For an open garden scene, bright sunlight, about 1/5 of a second at F4.5 would give an accurate exposure, or the equivalent of this if smaller stops are used. After exposure the film is developed in the following developer, diluted one to four, using a factor of 10, that is, developing for ten times the num-

ber of seconds it takes for the image to appear. An accurately exposed Filmcolor should be developed fully in from 2½ to 3 minutes.

First Development

Distilled Water.....	1000cc or 35 ozs.
Metoquinone	15 grams or ½ oz.
Soda Sulphite Anyd.....	100 grams or 3½ oz.
Ammonia (22° Baume).....	32cc or 9 drams
Pot. Bromide.....	16 grams or 240 grains

The darkroom lamp should be equipped with the special Virida papers for this work, and used with a 10 watt bulb. After the film is developed, it is rinsed thoroughly, and put into the following reversing bath:

Reversing Solution

Water.....	1000cc or 35 ozs.
Pot. Bichromate.....	2 grams or 30 grains
Sulphuric Acid (C.P.).....	10cc or 3 drams

After the film is immersed in the above solution, a white light may be turned on in the darkroom, and all subsequent operations may be carried on in this light. After the film is sufficiently reversed, which generally takes about 2 minutes, it is rinsed, and re-developed in the first developer, until it is all blackened over. The film is then washed for several minutes in running water, and hung up to dry.

The finished film may be mounted between cover glasses for protection, or carried in transparent envelopes. It may be viewed as a transparency in special shadow boxes called Diascopes, or may be used as lantern slides for projection, as they project very satisfactorily.

It is very simple now, with the aid of a special reproduction filter, to make reproductions of any of your film color pictures, by contact printing, on to another Filmcolor.

Filmcolor is used professionally in many branches of science, by hospitals and surgeons, for recording stained glass windows, and museum pieces. It is also widely used by florists and nurseries for photographing flowers and gardens, and for all other purposes where absolute accurate color rendition is essential.

Filmcolor is supplied in all standard sizes, and can also be supplied in centimeter sizes for foreign cameras, and in the 45x107mm and 6x13cm sizes for stereoscopic cameras. A special booklet describing this process more fully will be forwarded upon request.

Walter M. P. Batts, R. J. Fitzsimons Corporation, 75 Fifth Avenue, New York City.

COLOR IN FRANCE

"La Cinematographie Francaise," the fortnightly paper published at Paris, France, announces PARIS COLOR FILMS very soon to be shown in Rene Bazin's big picture, "La Terre Qui Meurt." So does the flood of color roll on and on.

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By WALTER H. CARSON



It is the natural sequence that in the development of any art or industry the new supplants the old in the never-ending attempt to reach the ideal of which any medium is capable.

The legitimate stage producers looked with disdain upon the feeble efforts of the earlier motion picture producers, little knowing that the crude flickering shadows on the screen of the old time nickelodeon were but the first indications of the development of an industry that would some day far surpass the legitimate stage as a means of dramatic entertainment to say nothing of the place that it would take in industrial, educational, and travel pictures.

For a number of years the legitimate stage was able to maintain its position in the amusement field because it had one factor, which up to that time the motion picture could not supply, namely: **Sound**. From the time of the introduction of sound even in its crudest state it was inevitable that the trend of theatrical productions would have to be changed to meet the ever growing popularity and mass appeal of the talking motion picture.

One of the efforts that has been made by the legitimate stage to stem this tide of ever growing popularity is the introduction on the stage of a pageantry of depth and color which the film had not yet attained, but the march of progress is not to be denied and if the entertainment value of the "make-believe" as interpreted by the motion picture can now attain a comparable step by bringing to the screen **color** and **depth**, which to a great degree are synonymous, the ascendancy is bound to remain with the motion picture and sadly as we may view the passing of the legitimate stage it seems inevitable that it cannot withstand the inroads of this latest innovation.

It is not the intention of this article to decry the value of the dramatic efforts of our greatest actors and actresses whose talents have been confined to emotional portrayal behind the footlights. Unfortunately, it is the dollar return as represented by the sale of seats and box office returns as compared to the dollar spent on the production itself that must in the last analysis be the determining factor.

Photography, even in the black and white field, is at best a difficult medium with which to work because it is dependent upon the delicate balances of certain chemical equations and constant variations of light. When to this you add the many mechanical complications which the introduction of sound has made necessary to say nothing of the tremendous expense which has been involved in both studio and theatre to accommodate that development, it is not unnatural that the producer is reluctant to accept any new factor which will without question still further complicate production difficulties and again add to the expense. The first question is, assuming that a satisfactory color is available, how much will it add to the production costs and will the added expense be warranted by increased returns in the box office? We do not believe that this question can yet be answered because of the dearth of satisfactory color

subjects utilizing narrative and dramatic medium of comparable quality.

It is unfortunate that in most cases the use of color on large productions has led to an accentuation of the color itself at the expense of the narrative value of the subject used. In other words, the use of color has been an end to demonstrate what color would do rather than a means to enhance the production itself. Until this technique has been developed so that the use of color will serve its intended purpose we do not believe that we can fairly judge its comparable value as a factor in a successful production or prove its indispensable value as a box office factor.

One of the reasons why color has not been utilized more extensively up to the present time is the fact that it involved the use of special cameras and an excessive amount of light for illuminating the set and very highly specialized laboratory equipment to produce duplicate prints. DUFAYCOLOR film is the first photographic medium with which it has been possible to produce a color result on the screen with existing camera equipment, only a slight increase in set illumination, standard laboratory equipment, and no modification of projection equipment or screen illumination.

This result has been achieved by the development of a film based on the additive principle wherein the film itself bears a tri-color screen of microscopic fineness in the three primal colors: red, blue, and green, which when loaded into the ordinary camera may be used the same as black and white negative of standard or panchromatic type and with a slight increase of exposure either in shutter speed or aperture secure a negative film in complementary colors which may be developed by ordinary development and fixation such as is now being done in standard developing machines. From this negative any desired number of positive prints can be made in either a projection or contact printer onto DUFAYCOLOR positive stock which differs from the negative material only in the fact that the screen pattern is applied to the base at a different angle and the emulsion so sensitized as to eliminate what is known as the over-laps in the transmission of the three original dyes used in the screen of the taking or negative stock.

By the use of a three color additive system applied to the film itself in a pattern of sufficient refinement so that it is not obviously visible on the screen when the film is projected to the size required for theatre use it is possible to meet all of the theoretical problems which have made the use of color impractical in other processes. When to this feature is added a fidelity of reproduction of the entire spectrum in colors which are not garishly objectionable so that the color detracts rather than enhances, we feel sure that the value of color so used will justify the moderate increase in cost and become such an integral and necessary part of every screen production that without it the box office value will be minimized to the point where no producer will seriously contemplate a major production of any sort without the use of this new medium.

The Keller-Dorian Three-Color Process

By WILLIAM E. CELESTIN

President, Keller-Dorian Colorfilm Co.

FOR the past year, representatives of Paramount Productions, the Eastman Kodak Company, and the Keller-Dorian Colorfilm Company, have been quietly at work in Hollywood, completing the final practical tests of a new and amazingly simple three-color process of natural-color cinematography. Working at the Paramount Studio, under actual studio conditions, the process has demonstrated its complete applicability to modern production requirements, and established a new standard of fidelity, simplicity and economy in color filming.

Although new to studio use, the Keller-Dorian process is by no means a mushroom growth. It was invented in France more than a decade and a half ago, and for the past seven years, a somewhat crude version of the process has been in general use in the 16mm. field under the trade-name "Kodacolor" ("Agfacolor" in Europe). Millions of feet of successful 16mm. color have been made in this process by unskilled home-movie makers. Thus the task of the Paramount and Eastman experts has been one of refining and adapting a commercially successful process to the requirements of present-day studio production. Under the joint guidance of Dr. John G. Capstaff, Chief of Eastman's Research Division, Dr. N. M. LaPorte, and Farciot Edouart (the latter Paramount's representative on the Scientific Committee of the Academy Research Council), this work has reached fruition in a three-color Additive process which permits the use of any standard black-and-white camera with minor optical modifications and using but a single film. The processing is familiar black-and-white technique, and can be carried out in any plant; no centralized "color laboratory" is required. Experts have pronounced the screened results more true-to-life than anything yet seen; and the cost-sheets prove the process the most economical three-color system yet introduced.

In any three-color process, it is necessary to secure three color-separation images, one of which records the red components of the scene, another the blue, and the third the green. In some processes, these separations are obtained by using three sep-

arate films; in others, the three images, either as three normal-size frames or three frames of reduced dimensions, have been made on one film through intricate beam-splitters and prisms. In the Keller-Dorian process, a unique, yet essentially simple optical system combines these three separations in a frame which is to all appearances a perfectly normal single image. The celluloid base of the film is embossed to form a myriad of tiny cylindrical lenses which extend from one side of the frame to the other. A special filter consisting of parallel horizontal strips of red, blue and green is placed on the camera lens. Each of the tiny embossed lens-strips on the film forms a microscopic image of this filter on the emulsion; therefore each frame consists of an infinite number of parallel, microscopic strips, each of which is photographed through one of the primary-color filter areas of the lens. The same principle is used in projection, with a suitable three-color filter applied to the projector's lens. Thus in photographing a red object, for example, the red rays could pass only through that part of the lens governed by the red section of the filter, and would be arrested by the blue and green sectors. This condition would be passed on to the emulsion through the lenticulations on the film-base; the red-filtered strips only would receive exposure. In the developed negative, only these red strips would be dense; the adjacent blue and green filtered strips would be clear. In the print, these latter two strips would be opaque, while the red-filtered strip would be clear. When projecting, the light from the lamp would pass only through the clear, red-filtered section; and the embossed lens on the film would guide it to the red-filter section of the projecting-lens, reproducing the image of that part of the picture with red light. The coloring is thus produced and reproduced solely by the familiar factors of filtering and black-and-white density. Since these are so well understood from years of monochrome experience, there is no factor which can cause color-variation in the release-prints.

Any standard camera suitable for serious black-and-white cinematography can be used as a Keller-

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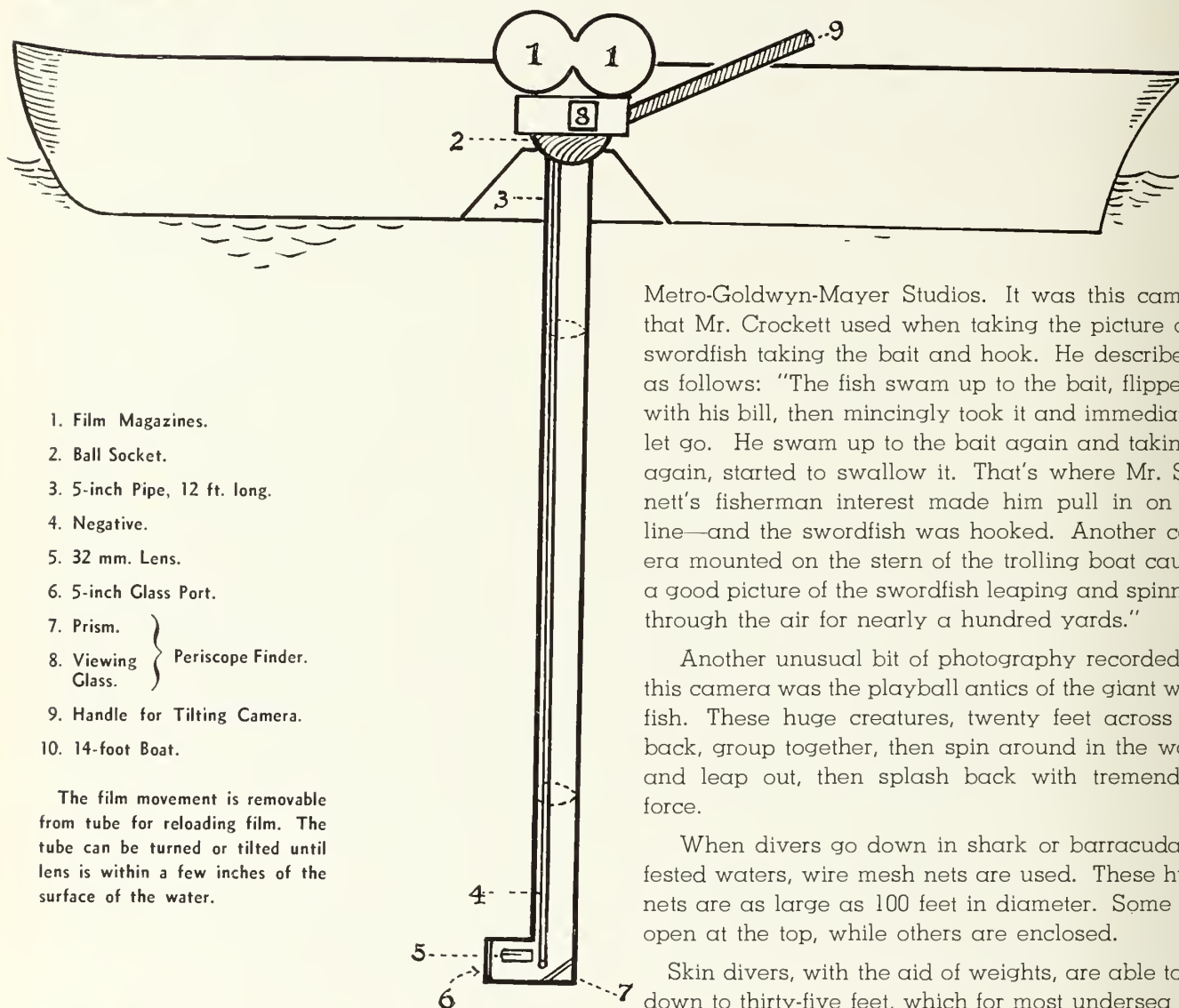
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Sunlight Under The Sea

By PAUL R. HARMER

PAPER NO. III.



1. Film Magazines.
2. Ball Socket.
3. 5-inch Pipe, 12 ft. long.
4. Negative.
5. 32 mm. Lens.
6. 5-inch Glass Port.
7. Prism.
8. Viewing Glass.
9. Handle for Tilting Camera.
10. 14-foot Boat.

The film movement is removable from tube for reloading film. The tube can be turned or tilted until lens is within a few inches of the surface of the water.

RECENTLY I had the pleasure of chatting with our good friend, Earnest Crockett, one of Hollywood's finest motion picture cameramen. He is well known around the studios and has many pals among the celebrities and technicians. He is the cameraman who helped develop the Mack Sennett periscope camera which made under water moving pictures a real thrill for the motion picture audiences. For nine consecutive years Mr. Crockett made a trip each summer with Mr. Sennett, getting choice under water shots of fish, seals, sharks and other interesting sea life which were used in the Sennett Productions.

A diagram of the principle of the camera, which was patented by Mack Sennett Company, is shown. The only model now in Hollywood is owned by

Metro-Goldwyn-Mayer Studios. It was this camera that Mr. Crockett used when taking the picture of a swordfish taking the bait and hook. He describes it as follows: "The fish swam up to the bait, flipped it with his bill, then mincingly took it and immediately let go. He swam up to the bait again and taking it again, started to swallow it. That's where Mr. Sennett's fisherman interest made him pull in on the line—and the swordfish was hooked. Another camera mounted on the stern of the trolling boat caught a good picture of the swordfish leaping and spinning through the air for nearly a hundred yards."

Another unusual bit of photography recorded by this camera was the playball antics of the giant wray fish. These huge creatures, twenty feet across the back, group together, then spin around in the water and leap out, then splash back with tremendous force.

When divers go down in shark or barracuda infested waters, wire mesh nets are used. These huge nets are as large as 100 feet in diameter. Some are open at the top, while others are enclosed.

Skin divers, with the aid of weights, are able to go down to thirty-five feet, which for most undersea pictures is deep enough.

In order to give the reader an idea of the intensity of sunlight under the sea, the stop required in Fourth of July Bay and Isthmus Cone, Santa Catalina Island, was F: 5.6. In the sea near the Perlas Islands, Panama and in the Carribean, the stop was F:8, one fiftieth of a second exposure, no filters. This exposure gave good density on the negative in water depths down to thirty-five and forty feet. The shots were made from 10 A. M. to 3 P. M., using flat light (sun to the back of photographer).

The clearest waters encountered were Santa Catalina Island, Tahiti and San Blas Islands, in the Carribean.

Billy Williams and Earl Stafford operated this camera on various other expeditions.

Lighting Equipment For Natural-Color Photography

YOUR usual conception of **light** is keyed to sunlight, which is a blend of all the color-frequencies from one end of the spectrum to the other. So perfect is this blend that we are not conscious of color at all: It is pure, white light.

Lighting for natural-color cinematography must reproduce this condition, for since the picture is in color, any unnatural coloration in the lighting will be photographed, and will tend to give the picture an unnatural appearance on the screen. In addition to meeting the usual standards of intensity and light-distribution, lamps for color photography must also produce light whose color is as nearly as possible identical with that of mid-day sunlight.

There are at present two light-sources whose rays approximate natural sunlight. The first of these is the carbon arc. As can be seen from Figure 1, the spectral energy distribution of a modern studio arc lamp is almost identical with natural sunlight except for an excess of the invisible ultra-violet, which can, however, be filtered out by means of a sheet of plain lead-glass, which does not in the least affect the lamp's visible light.

The second source is the high-temperature tungsten-filament globe. This is a relatively recent development of the familiar Mazda incandescent-filament globe. By burning the globe at a voltage somewhat higher than that which would produce a normal light, it is possible to increase the filament-temperature so that the light is much whiter than would ordinarily be the case. The "Photoflood" and "Movieflood" globes are of this type. Designed to operate at filament temperatures higher than normal, they give a strongly white light when operated at the higher voltages generally used in studio practice.

Of these two sources, the arc is at present the most generally used for lighting natural-color productions. It is inherently very well suited to the requirements of today's color processes. It is extremely efficient in producing the high levels of illumination needed, and it will operate satisfactorily on a variety of voltages. The high-temperature tungsten filament globes, on the other hand, are (in the higher wattages) still more or less in the development stage. We know in theory what these lamps will do, and how they should work on color-film production, and the research experts of several organizations are busy reducing this theory to a matter of commercial practice. It may be said, however, that the use of these globes offers unquestionable possibilities for the future.

The equipment in use on color sets today is predominantly of the arc type. Some of the units are of familiar types, having been in use since pre-Vitaphone days; other types are of recent introduction, having been developed expressly for the needs of modern color photography. For the purposes of this review, these units will be considered chronologically, rather than categorically.

The basic spotlighting units are the 24-inch and 36-inch Sun Arcs. Both of these are types that were

By PETER MOLE

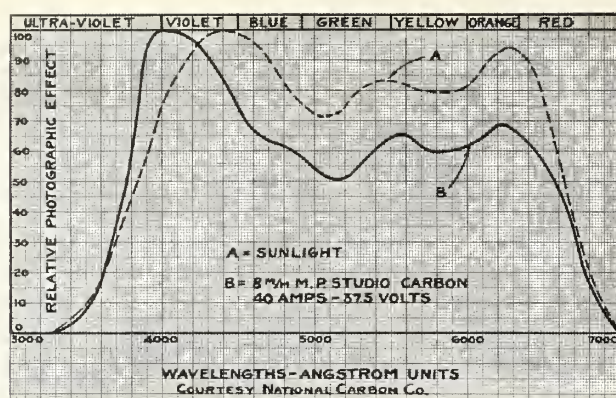
Mole-Richardson, Inc.



in general use before the coming of sound. Except for such necessary modernization as the use of fibre gears in the carbon-feeding mechanisms, and the application of choke coils or other electrical silencing devices, these lamps have required no modification. The Sun Arcs are high-intensity rotary-carbon spotlights, using a parabolic mirror to collect the light and project it as a beam. The parabolic mirror is one of the most efficient light-collectors known, and the beams from these lamps are of very high power. The parabolic mirror is not, however, so efficient in its distribution of the light when the beam is flooded, and the fact that part of the carbon-feeding mechanism must necessarily be placed in front of the mirror adds to this central shadow when the beam is flooded. More modern units, with better beam-distribution, have been introduced within the past year, and will ultimately supplant the Sun Arcs; but as nearly every studio has quite a number of these older units, they are extensively used on color productions.

Some of the old-type 100 Ampere rotary-carbon condensing-lens spotlights are also in use. Most of the units of this type proved unsuitable for modern use, as their carbon-feeding mechanisms did not rotate the positive carbon with sufficient speed to maintain a symmetrical crater, resulting in an unsteady light. Some of the later lamps of this type, however, have been found to have a rotation speed rapid enough to support a symmetrical crater, giving a light satisfactory for use with modern color processes.

The basic general lighting units are the twin-arc floor and overhead floodlighting units. The older units of this type proved entirely unsuitable for modern use, as they were noisy, unsteady, and not sufficiently powerful. They have been completely superseded by new equipment. The modern floor unit is the MR Type 29, familiarly called the "Side Arc." It is a 40 Ampere, twin-arc floodlight. A separate mechanism is used to feed each of the two arcs, thus ensuring greater uniformity of the light-flux, and mechanically silent operation. The reflecting system gives an exceptionally uniform distribution of the light over an angle of 60 degrees. The light produced is constant both as to quantity and as to color, and exceeds the output of the obsolete "Broad-



side" types by an average of 250 per cent. In operation, the lamp is silent, and the light produced is almost identical with mid-day sunlight.

For overhead use, the same mechanism and an essentially similar reflecting system have been built into an overhead floodlighting unit. This is MR Type 27, known as the "scoop." It is identical with the Side Arc except for the fact that it is built to be hung from above rather than mounted on a floor standard.

The next unit developed with the "H-I-Arc" (MR Type 90). This is essentially an adaptation of the "Morinc"-lens construction familiar in the incandescent "Solarspot" to the latest conception of high intensity arc mechanisms. The unit itself is comparable to the 24-inch Sun Arc, which it is supplanting. Applying the "Morinc"-lens principle not only improves the beam-distribution by eliminating the faults inherent to the parabolic mirror, but also eliminates the Sun Arc's objectionable element-shadow.

The "H-I-Arc" is a 120 Ampere High Intensity Rotary Carbon Arc Spotlight. A newly-developed, slightly smaller carbon contributes to both increased intensity and better color. Careful attention to keeping the incandescent crater of the positive carbon symmetrical results in steadier, more uniform burning. Over a 20-minute burning period, the "H-I-Arc's" light will not vary plus-or-minus five per cent. Careful electrical and mechanical silencing of the carbon-feeding mechanism, coupled with the fact that the feed is continuous, rather than intermittent, have reduced the operating noise to a point where the lamp may be used within ten feet of the microphone. For such abnormally close work, the feed need not be stopped, but merely slowed down by a speed-control provided.

As the "H-I-Arc" is designed around a lens 14 inches in diameter, it is naturally a smaller and more compact unit than the conventional 24-inch mirror-arc. A considerable saving in weight also results. Notwithstanding its smaller size, however, the "H-I-Arc," especially in the wider beam-spreads most commonly used, has proven itself fully equal to the larger 24-inch Sun Arc.

More recently, a companion unit of higher power has been put into use. This is the "Ultra H-I-Arc" (MR Type 170), a 150 Ampere unit of similar construction not larger in size and power. The "Ultra H-I-Arc" was first used on "Dancing Pirate," where they proved themselves definitely superior to the much larger 36-inch Sun Arcs.

Most recently, the MR Type 60 arc spotlight has been introduced, to replace the old 80 Ampere spotlight. This unit is of the non-rotary type, and fitted with a conventional plano-convex condensing lens. It has the advantages of silent operation, and supplies the same spectral quality of light as do the other high-intensity lamps.

With all of these units, modern incandescent filament lamps are also used, and serve two important functions. The most common is for warm projected-color effects. For this, standard incandescent globes are used, either in the familiar 24-inch and 36-inch Sun Spots, or in the newer and more controllable Junior and Senior "Solarspots." The yellower lights from these lamps, especially when contrasted with the almost perfectly white light of the arcs, produces a mellow, orange-red light which gives an excellent representation of lamplight, etc.

The newer, overvoltage "Movieflood" type of incandescent globes also fill an important need in normal lightings. It frequently happens that certain parts of a set cannot conveniently be lit with the arc equipment, either because the space available for lamps is small, or because the lamps used must be tipped at an angle such that the arc would not burn satisfactorily. For these purposes, the Movieflood globes, usually with a corrective daylight-blue filter, are ideal. For spotlighting inaccessible parts of the set, the globes may be used in conventional parabolic-mirror Sun Spots, or in the more modern Solarspots. For generally illuminating small closed areas such as small rooms off a stage-built exterior set, hallways, closets, etc., these globes in special strip mountings are invaluable, and in some cases have been the only possible means of doing the job.

Filtering plays an important part in lighting a natural-color picture. It has already been mentioned that when the over-voltage incandescent globes are used, they are fitted with filters of daylight-blue, to eliminate the small remaining predominance of



the incandescent globe's characteristic yellowness. In the same way, since the high intensity arcs produce a slight excess of blue, these units are normally used with a light straw-colored filter, which coordinates their light perfectly with that of the lower-powered general lighting equipment. Since all arcs produce an excess of the invisible but harmful ultra-violet, these rays are invariably filtered out by the use of a sheet of clear lead-glass or by the lenses with which they are fitted. This does not in the least change the lamp's illuminating characteristics, but it effectively removes the cause of the early-day plague, "Kleig eye."

For projected-color effects, gelatin filters of any shade or color may be used, either locally, or in the entire scheme of lighting. The possibilities of this technique have scarcely been explored.

The various types of diffusion commonly used in black-and-white lighting are also used in lighting for color. In addition, a special iris-diaphragm attachment has proved very useful for special effects with the newer "H-I-Arc" types. By closing the diaphragm as the lamp's beam is flooded out, it is possible to decrease the intensity of the light to any degree, without changing the size of the beam.

Experience is proving that lighting for natural-color photography is not difficult. Each color production adds to the practical knowledge of the subject, and as practical experience is gained, and newer and more precisely controllable lighting equipment becomes available, the mystery of color lighting vanishes. Each process, of course, has its characteristic special requirements, but in general, there



is much less difference between lighting a monochrome picture and lighting a color picture than was once imagined.

Color's outstanding requirement (so far, at least) is for a considerably higher average level of illumination, to offset the inevitable losses in filtering and dividing the light into three color-separation images. This increased intensity is most frequently obtained by using higher powered units than would be required to produce the same in black-and-white, though in some instances, a practically normal black-and-white lighting may be used, modified only by using the spotlights at a more concentrated beam, and by eliminating some of the diffusers used on the lamps.

The exact amount of increased intensity necessary for color cannot accurately be fixed. It varies greatly, not only with the process used, but with the technique of the individual cinematographer. One expert recently stated that in his experience, in extreme low-key and effect lightings, color technique was very nearly identical with black-and-white, both as regards balance and the level of light required, while when working in higher keys, and in more conventional lightings, the need for additional illumination in color scenes increased largely because of the need for additional illumination in the shadows to offset the shorter gradational range of all color-processes.

In general, a rather flatter lighting balance than would be used for black-and-white seems to produce the best results in color. This is to be expected; in monochrome photography, the only possible method of separating objects and planes is through contrast of light and shade, while in a natural-color scene, much of this can be achieved by natural color-contrasts. In "The Garden of Allah," for instance, there is a sequence played by Marlene Dietrich, wearing a soft, light-blue dress, in a gray Arab

(Turn to Page 30)

ferred for COLOR



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AMATEUR MOTION PICTURE SECTION

HAMILTON RIDDEL, EDITOR



RIGHT OFF THE REEL

Smooth Panoramic Shot: Many an amateur movie maker, possessing only an ordinary "still" camera tripod, overlooks the usefulness of this accessory in motion picture work. Because the tripod has no friction or geared pan head, is no reason for not using the "still" outfit; and while it is true best results are obtained with a regular movie tripod and head, the ordinary "still" one may be employed to good advantage. It is decidedly better than a hand-held panorama shot. Do not completely tighten the movie camera on the "still" tripod. Grasping the camera as it is in operation, it may be revolved slowly upon the tripod, thus securing a surprisingly smooth pan shot. Needless to say, a little practice before actual filming will improve the final "take."

Lens Precaution: With the advent of summertime, with consequent greater outdoor movie camera work, particular attention should be paid to the protection and care of the camera lens. Avoid undue exposure of the lens to the hot sun. Before making scenes near water, make sure no water or spray has settled on the lens.

Counting Off Seconds: Many amateur cameramen meet with disappointment when their individual shots in a roll of film turn out too long or too short. Apparently, the difficulty is due to their having no conception, when photographing, of what constitutes the average 10-second scene length. A satisfactory gauge of timing can be obtained by counting off seconds while the camera is in operation. Train yourself, until it becomes a regular habit, to measure, either audibly or inaudibly, the seconds by using the old darkroom method: "one-thousand-and-one," "one-thousand-and-two," "one-thousand-and-three," and so on.

Preservative Fluids: Motion picture film at best is a fragile commodity, but it is not often considered as such by the casual filmer. That it withstands the hard wear and tear of common usage is indeed a tribute to modern manufacturing. Fortunately enough, there are preservative fluids which help keep movie film flexible. Used in conjunction with humidor cans, such fluids prevent the risk of formation of fungus and mould, thus preserving film freshness. Use of preservative fluids is to be encouraged.

Prompt Processing: For best photographic results, as any motion picture laboratory man will tell you, a movie film should receive prompt processing after exposures have been made. It can not be too strongly stressed that it is poor technique to expose part of a roll—and six months later finish it. The early footage may result in inferior screen pictures, due to the prolonged lapse of time between exposure and processing. It is far better practice to expose an entire roll of film, all within a reasonable length of time, and have it processed immediately.

CINE ESSENTIALS

A Review of Ever New Film Fundamentals

By F. HAMILTON RIDDEL

IT is not difficult making good movies nowadays with the thoroughly dependable equipment and film which is available, whether one's outfit be of simple variety or the more luxurious deluxe equipment, and yet ever present there remains the human element in the undertaking. Amateur cameramen being human, it is only natural that mistakes will occur by carelessness, by inattention to first principles and perhaps most often because we are all creatures of habit.

Novices or maestros in the amateur movie game, we form a habit of making our movies a certain way—so often the wrong way—and let it go at that. We may well pause, therefore, every now and then and dwell for a time upon the fundamentals of filming, the Cine Essentials.

Old as amateur movies, and yet ever new, are these fundamental principles of good filming. Moreover, the old saying "In everything you do, consider the end" is so applicable in cinematography that

reiteration of cardinal rules of the game can not fail to prove worthwhile. Reviewing cine essentials frequently will prevent formation of careless habits in movie making.

Camera Steadiness

One of the main principles of cinematography is camera steadiness. Volumes have been written on this; cautions, by the score. Yet film laboratories every day see wobbly scenes, jittery shots in many rolls they process. Such results aren't movies, they're just a lot of acetate debased.

It is common knowledge that professional cinematographers invariably use a tripod, but it is perhaps less well known that these tripods are cumbersome affairs of great weight. For the professional knows that all movement of the camera even from vibration, while it is in operation, must be overcome. The steadier the camera, the sharper will be the pictures. This axiom is every bit as true of the compact amateur movie box. Remember, then, to keep your

camera steady. You're making motion pictures and to effect the illusion on the screen it is only permissible for your subject to move—not the background too.

A Level Camera

Carefully observe your subject via your camera viewfinder. It should show up there perfectly level, just as it will appear on the screen. Otherwise, you'll have the ridiculous effect of up hill and down dale movies! Hold the camera perfectly level, therefore, while making shots. This is elementary advice; yet it is surprising how often cock-eyed shots appear in amateur films. Again, we say—hold your camera level!

Camera Panoramizing

Panoramizing, or "pam shots" as they are more popularly known, occurs when the camera is moved horizontally across the field of action, while it is in operation. Pam shots should only be made when there is good reason for them. Don't become one of those garden hose variety of movie makers who gyrates a camera hither and yon. Motion pictures aren't obtained this way—only fuzz.

Pamming correctly, your subject should not be too nearby. This positioning will allow you to move your camera very, very slowly; very, very evenly; and only far enough to get the picture.

There are notable exceptions, of course, regarding pams, such as certain fast action required to cover a rapidly moving subject. For example, a horse race. In such cases, it is permissible for the background to blur, for the effect adds sharpness and rivets attention on your subject.

Recall, however, that you must have a good reason for making any pam shot. And that you must shoot it carefully.

Viewfinder Composition

Any good movie shot depends on good composition. Don't hurriedly start photographing as soon as your camera is in position. Study the composition of the subject as it appears in your viewfinder. Watch a good professional director at work, and you will note he never calls for action until he's seen the shot-to-be through the camera viewfinder. In the case of making a scenic shot, particularly, try to select a viewfinder composition that not only is pleasing, but also has some foreground in it. You want beauty and depth in such shots.

Exposure Calculation

Whether you judge exposure by experience, table, camera chart or meter, determine the calculation deliberately and carefully and set the lens accordingly. The old rule of still photography still holds good in cinematography: expose for the shadows and let the highlights take care of themselves. This old photographic rule is particularly true when using negative-positive film in your camera; slight over-exposure is recommended. With reversal film, how-

ever, experience dictates slight under-exposure when in doubt.

When you change a camera setup for a different shot or scene, don't forget to change your lens setting accordingly. Keep in mind that a long shot requires less exposure than does a close-up.

Lens Focusing

Generally speaking, universal focus camera owners have one less important film fundamental to bear in mind. They need only watch out for extreme close-ups. Focusing lenses, however, must be carefully used and properly set. In your hurry in changing from one set-up to another, don't forget to re-focus for the new shot.

Camera Motor

Experience teaches all cameramen to be on the alert for the unexpected to happen. When it does, as it most surely will, have your camera in instant readiness. One habit worth forming is keeping your camera motor fully wound. At the completion of each and every scene, wind the spring. By so doing you'll never be disappointed, nor waste film, by having the motor run down in the middle of a scene or exciting shot.

Lens Flare

We needn't say not to shoot towards the sun with your camera. But we must say: Always observe that the sun's rays (indoors, the photofloods' rays) do not strike the lens directly. For this will cause lens flare, a halo effect, that is displeasing in the extreme. Shoot your movies as you have a mind to. Just remember the lens should always be shaded.

Interesting Shots and Length

An understanding of what constitutes an interesting subject is known as "cinemasense." Always strive to avoid monotony in your subject matter and in the length of your scenes. With rare exception, no scene should run longer than ten seconds, nor less than five.

Sequence and Close-Ups

A sequence, the unit in making movies, should carry the spectators of your film from a general view to a particular big close-up. By successive shots, from long shot to close-up (or vice versa, in some cases), the sequence weaves your film story together into a comprehensible pattern.

An important factor in photographing a sequence is the close-up. One heritage of the box Brownie days which, in making movies, must be disowned, is restricting all pictures you make to distant and medium shots. Make many close-ups! They tell the film story better, much more clearly and satisfactorily.

Amateur movies, of course, are improving constantly as the technique of making them becomes familiar to movie enthusiasts, with a mind set on observing fundamentals. And too, there are new amateurs starting in every day to whom we hope this review of Cine Essentials will prove of assistance and guidance.

CINEMA-TIDINGS

Amateur Motion Picture News

New Superspeed Filmo Double 8 Announced: As the superspeed model of the Bell and Howell Filmo Straight 8mm camera, which uses the pre-split Filmo-pan 8mm film, has proved so popular, B & H now announces a Superspeed Model of the Filmo Double 8mm camera. The Double 8's use Eastman 8mm film.

The new Superspeed Double 8 makes available four camera speeds—16, 32, 48 and 64 frames. Other-

wise it is identical with the regular speed Filmo Double 8 camera, which operates at 8, 16, 24 and 32 speeds.

It is announced that introduction of this new Double 8 model is actuated by the maker's desire to give 8mm users much of the versatility for which 16mm camera owners have so long looked to this firm.

Victor's 16mm Film Directory: Victor Animatograph Corporation's "Directory of 16mm Film Sources," now in its Fifth Revised Edition, is a most comprehensive listing of where to buy, rent and borrow 16mm film subjects. Both silent and sound-on-16mm sources are included, together with several pages devoted to information and data on 16mm. The Directory, consisting of 100 pages, will prove of value to all 16mm users.

Cine-Kodak Tripod Truck: As a new movie accessory—for getting smooth, mobile camera shots—Eastman Kodak has announced the Cine-Kodak Tripod Truck.

With camera and tripod mounted on this 3-wheel movable stand, amateur cinematographers can easily follow action which is being photographed. When a stationary camera shot is required, a convenient toe-brake locks the truck securely. Cine-Kodak Tripod Truck, greatly simplifies the making of "dolly" shots, and should have much appeal for the serious worker.

Increased 8mm Output: Further evidence of the popularity of 8mm movies may be deduced from a recent announcement of the Bell and Howell Company of Chicago. According to word received, the company's factories are working extra shifts and both Straight 8 and Double 8 cameras now constitute an important part of Bell & Howell production.

"Wratten Light Filters": The Fourteenth Revised Edition of "Wratten Light Filters," published by Eastman Kodak Company, is a valuable reference book consisting of some 93 pages of text and illustrations. The 1936 edition gives latest technical information and data on the Wratten filters. Over one hundred filter varieties are listed by name, use, and stability to light.

The new edition of "Wratten Light Filters" may be

obtained for fifty cents per copy from Eastman Kodak Company, Rochester, N. Y.

New Model Filmosound Projector: A one-case, moderately priced, 16mm sound-on-film reproducer, known as Filmosound 138, is announced by Bell & Howell Company. Light (weighing 57 pounds complete), compact and portable, model 138 is said to be ideal for salesmen's use, for educational purposes in school classrooms, and for home entertainment.

Filmosound 138 consists essentially of the time-tried Filmo projector, with sound head, amplifier and speaker. The sound head embraces a rotating sound drum and a film shrinkage compensating "floating idler." A balanced flywheel, rotating as an integral part of the sound drum assembly, assures constant speed and hence freedom from sound flutter. Voltages on exciter lamp and photo cell are automatically balanced as volume control is changed, thus providing an automatic "photo-hiss" eliminator. The same photo cell and exciter lamps are used as in previous Filmosound models, but all amplifier tubes are of the new metal-tube type.

The new model 138 uses a 750-watt projection lamp, and may be operated at either sound or silent film speed. A fast 2-inch projection lens is standard equipment, but other sizes to meet all projection conditions are also available as optional equipment. A new type convenient tilt rod, motor re-wind, and quickly attached reel arm are additional features.

Filmosound 138 packs into a single 8½x18x29 inch case, with accommodation for a 1600-foot film in humidior can. For use, the one-unit projector and amplifier is removed, and the case then serves as a baffle for the built-in speaker. The case is covered in gray fabricoid to match the gray damaskene-finish of this new 16mm sound reproducer.

EASTMAN ANNOUNCES 8MM. KODACHROME

(Editor's Note: Coinciding indeed with "The International Photographer's" special June issue on color is the announcement of 8mm Kodachrome. Great impetus in the 8mm amateur movie field will result, now that small-film enthusiasts may also enjoy all the natural color filming of their older brothers, the 16mms.)

That long awaited announcement from Rochester has been made by the Eastman Kodak Company. Cine-Kodak Eight Kodachrome, the natural color film, is ready for the great army of 8mm. enthusiasts!

Since the first announcement of 16mm. Kodachrome was made in 1935, thousands of amateurs have been asking the same questions: "When can we get Kodachrome for our 8mm. movie cameras?" "If it can be made in 16mm, why not eight?"

However, exacting experiments and tests revealed problems occasioned by the smallness of the image on 8mm. film. It has taken time to solve these technical problems but now the work is completed.

Cine-Kodak Eight Kodachrome is ready—and ready without reservations. With this new Kodachrome Film the 8mm. amateur movie maker can now make his movies in full color as satisfactorily as he has made his black-and-white. Any 8mm. camera using Eastman double 8mm. film will take Kodachrome movies. No filters are required for the making of all average shots. All 8mm. projectors will show Kodachrome movies. Again, no filters.

There are, however, precautions to consider.

As most 8mm. film users have probably learned by now from their experience with black-and-white film, the most effective results are obtained in fairly close views; that is, pictures made from 2 to 25 feet from the subject. This does not mean that you will not be able to make distance shots with a camera loaded with Cine-Kodak Eight Kodachrome Film.

You can—and get wonderful effects. But as the colors of objects are more apparent to you when near by, so are Kodachrome movies of objects clearer and more pleasing when your subjects are relatively near the camera.

Correct exposure in Kodachrome Film is of the greatest importance. In brief, Cine-Kodak Eight Kodachrome requires a slightly larger aperture than Cine-Kodak Eight "Pan" Film—as is clearly pointed out in the instructions supplied with each roll of Kodachrome. These instructions should be religiously observed, because over—or underexposure in color filming not only affects the quality of the images but likewise the colors.

While filters are definitely not an integral part of the Kodachrome picture, there are occasions when their use may be desirable. Outdoors, when making distance shots presenting the problem of haze, a Kodachrome Haze Filter is suggested. It necessitates no change in exposure. And when filming indoors under artificial light, it is necessary to use the Kodachrome Filter **for Photoflood**.

The projection of Kodachrome is completely trouble-free. No extra gadgets are required. You can splice color sequences right in with black-and-white, project them consecutively without even a single adjustment of your projector. The color is in the film.

Certainly 8mm. owners will be greatly interested in the opportune arrival of 8mm. Kodachrome Film for their cameras.

QUESTIONS AND ANSWERS

By F. HAMILTON RIDDEL

1. Will you list a comparison of the various size films, giving the number of frames per foot in the respective sizes?

Professional standard film, 35mm, has 16 frames per foot. 16mm film has 40 frames per foot. And 8mm film has 80 frames per foot.

2. In using the hand-crank on my camera, instead of the spring motor for certain shots, a few pictures at the end of the scene are badly overexposed. How may this be avoided?

It is natural that as you cease normal cranking speed, a few pictures, or frames, will receive increased exposure. Simply delete these overexposed frames by editing them out. Or with an unloaded camera, check the shutter rotation as you turn the crank, noting the position of the crank-handle when the shutter fully covers the film aperture. Henceforth, by stopping your cranking abruptly, in proper closed-shutter position, you will minimize overexposed end frames. It is better practice, however, to delete overexposed end frames in editing.

3. Can the sunshade on a camera lens be lengthened so scenes may be photographed more directly towards the sun without danger from halation?

You might experiment in this. Lengthening the sunshade, however, will probably reduce exposures at large diaphragm openings and will vignette at smaller openings. It is easier and more advisable to shade your lens with the shadow of your hat, taking care the hat itself does not get into the picture.

4. I desire to double expose a title onto a scene by means of camera work. How should the two ex-

posures be made?

Shoot your visual scene, slightly underexposing it. Rewind the film and photograph your title, giving it correct exposure.

5. In making typewritten titles, what precautions should be taken in completing the cards?

First, the type should be absolutely clean. Second, a sharp impression must be made. Third, contrast must be great between card and typed copy. It is well to "back-space" each line of copy to secure greater contrast. Do not use a ribbon which is too fresh and smuggy, nor one that is too old and gives a ragged impression. Clean the type after every few cards.

6. What is the average life of a print?

Although film which is used in a projector is naturally subjected to more wear and tear than a negative, which is only employed in making prints, its life will depend largely upon how it is handled. Prints should be handled very carefully. The projector must be in perfect working condition. Proper storage of the print when not in use, following the recommendations of film manufacturers, will greatly prolong the keeping qualities of the film.

Note: As a service to amateur movie makers, we extend a cordial invitation to write in questions which will be answered in this column. Address all such letters to:

Questions and Answers Department
THE INTERNATIONAL PHOTOGRAPHER
1605 North Cahuenga Avenue
Hollywood, California

BEHIND THE LENS

The WHN "BEHIND THE LENS" radio program has been working on a fifteen minute period during the past month, but went back to a full half hour period starting May 16. The world famous miniature camera expert, Karl A. Barleben, Jr., F.R.P.S., is technical director of this program which includes valuable information and technical advice on the care and handling of a camera.

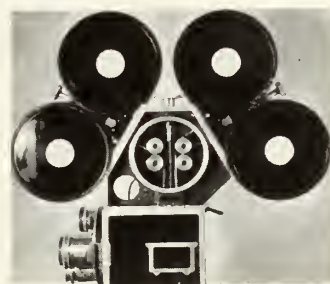
Monthly prizes awarded so far include a Photo-scope Exposure Meter, a Weston Universal Exposure Meter, a Chromotone outfit, an Argus Candid Camera and twelve sets of Fitzsimons MPG, FHS and FPD prepared photographic chemicals.

Guests during the past few months have included Ivan Dmitri, Fredrick Beach, George W. Hesse, Joseph Dombroff, Edward Alenius, Miss Cornelia Weston, Morris Germain, Harold A. Dumont and Adolf Fassbender.


The program goes on from 6:30 to 7:00 P. M., Eastern Daylight Saving Time, every Saturday. WHN operates on a frequency of 1010 kilocycles, 5,000 watts. The studios are located atop the Loew's State Theatre Bldg., 1540 Broadway, New York City.

BIPACK ADAPTER GAINING POPULARITY

The HCE V-Type Bipack Adapter is gaining popularity for color or process work. It has been proven thoroughly practical. As will be seen from the illustration, regular 400-ft. B. & H. magazines can be used without any alteration. Unlike the regular bipack magazine,



the operator can have three magazines loaded. Only one take-up magazine is required, thereby effecting a considerable saving. The main body is made of special close grain aluminum alloy and accurately machined. The rollers are made specially large with bronze bushings to assure free and easy rolling without scratching. The large removable cover plate permits quick and easy access for threading.—At Hollywood Camera Exchange, 1600 Cahuenga Avenue.



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By MORGAN HILL

New Film Rewinding Apparatus

terion Machine Works, 7769 Santa Monica Boulevard, GR. 5524.

The official monicker of this new improvement for the cutting room and new gift of the gods to the film editors is THE MORGAN HILL MULTIPLE REWINDER and, judged by the demand already created, it may justly be classed a success.

This success has urged the young inventor to try again and he has already patented another rewinder of double capacity—four reels—which will soon be on the market.

Morgan Hill is a member of Local 13, Hollywood. Phone HE. 2141.

The invention here illustrated relates to improvements in film rewinding apparatus, particularly adapted for use in the motion picture industry. The primary object of the present invention is the provision of an improved construction, whereby a plurality of films may be wound simultaneously upon a plurality of reels driven from one and the same drive shaft and, whereby the tension in the reels being rewound will be substantially constant, irrespective of differences in diameter which may exist in the supply reels or the take-up reels.

More particularly, the present invention makes the provision for a film rewinding apparatus of the above stated character which is extremely simple and compact in construction, easy and convenient to use and manipulate and efficient in operation.

This invention is the result of the research work of Morgan Hill, for eleven years assistant to Camera-man Rollie Tothoroh, of the Charles Chaplin Studios.

The idea of this new multiple rewinder is a brain child of Morgan Hill, but the machine was designed and built by Frank S. Testera, manufacturer, Cri-



Duplicating Kodachrome

By BILLY BOYCE

For years many of the largest concerns in the country have considered the 16mm. camera one of their most valuable assets in the way of sales promotion and educating the public with their product. With the advent of color the value of this kind of advertising has been greatly enhanced. It would be surprising to learn the vast amount of money that is spent yearly for this kind of work. One that came to our notice just recently is the expenditure of \$2500 on one picture. While this amount may not seem large to a producer it must be remembered that it brings no box office returns. If by any chance—and it oftens happens—this film were lost or ruined by careless handling in the machine, the entire \$2500 might as well have been bet on a horse that "also ran." Aside from the financial loss, many other disappointments would follow.

However, there is a very fine insurance for just that sort of a catastrophe. A duplicate copy of KODACHROME film may be procured for the modest sum of about \$200, which is very economical insurance on the original investment.

While on a snooping tour the other day we dropped in at the Stith Noble Corporation in Hollywood. We'd heard quite a bit about what they are doing,

but seeing is believing. Well, they told us what they are doing and then ran a lot of the original Kodachrome which was followed by their duplicate copy. In some cases there was a slight gain in contrast, due to the reversible process, and here's another fact that will delight the reader; owing to the fact that it is a DYE image there is no grain on the screen.

What started this company on their discovery was that in order to put sound on KODACHROME it was necessary to make duplicate copies, so the Stith Noble Corporation worked out a process to make these dupes. The sound recording on KODACHROME is just as good as that on black and white.

Here's another advantage in making these duplicates. A good many concerns want color over-emphasized (something like an artist's license). For instance, if peaches were colored in the pale yellow, exactly as they are, they don't look nearly so inviting on the screen as they do when this yellow is over-emphasized with some warmth. The Stith Noble Corporation accomplish this in their duplicating process by control of the different printing colors.

This company is located at 645 No. Martel St. in Hollywood and is glad to demonstrate its work to the many who are interested and fortunate enough to be in its vicinity.

WINNER

EASTMAN Super X is a winner for everybody in the industry...from the cameraman and producer who choose it to the exhibitor and public who ultimately benefit by its exceptional photographic quality. That is why Super X is used in making the majority of the world's feature pictures. Eastman Kodak Company, Rochester, N. Y. (J. E. Brulatour, Inc., Distributors, Fort Lee, New York, Chicago, Hollywood.)

EASTMAN SUPER X
PANCHROMATIC NEGATIVE

NOTES ON THE HISTORY OF COLOR IN MOTION PICTURES

(Continued from Page 9)

Originally Technicolor films cost the producers twenty cents a foot; then the cost was twelve cents, and now it is five and a half.

* * *

Technicolor colored a cartoon sequence drawn by Walter Lantz for the Universal film, "King of Jazz," released in 1930. Ted Eshbaugh released a complete cartoon subject colored in Multicolor, July 6, 1931.

The first use of the three color imbibition process was in a Walt Disney "Silly Symphony, Flowers and Trees," released on July 15, 1932 at Grauman's Chinese, in Hollywood. This film took the world by the tail.

* * *

Now color is here; if you have any doubt in the matter see the film "Dancing Pirate" soon to be released by Pioneer Production.

CANDID COLOR—THE MIKUT COLOR SYSTEM

(Continued from Page 2)

exposure made by operating only one of the control switches. The lens is, of course, stopped down to any desired degree for this operation. The same operation is repeated by using two more sheets of paper and exposing each with a different switch. This gives the three separation positives, all in exact register by virtue of the punched register holes.

The color is produced by any chosen method such as dye printing, toning, carbon and so on. When the color elements are completed, they are registered by the use of a special assembly board which has register pins inserted along one end. It is of special interest to note that in such cases as require a "black" plate, this is obtained by exposing all three images simultaneously upon one sheet of paper (or transparency plate.)

Among the factors of technical interest is the means of obtaining three identical images for the necessary color separation. This is usually done by a vertical division of the beam by the use of two mirrors behind the lens with a space between them; or by the use of part-silvered reflectors within the camera itself. The parallel tri-part mirror division produces the aberration of stereo-parallax, while the internal reflector usually imparts a distortion of refraction caused by the oblique passage of the beam through the glass of the reflector. Pellicle reflectors designed to overcome this refraction are too delicate for use in any but stationary studio cameras.

The Mikut makes use of a tri-part lens division, but instead of parallel, vertical stripes, the lens is divided radially, so that each image is composed of rays which pass through all zones of the lens. Moreover, when stopping down the lens iris remains approximately circular, thus avoiding the errors produced by elliptical diaphragms.

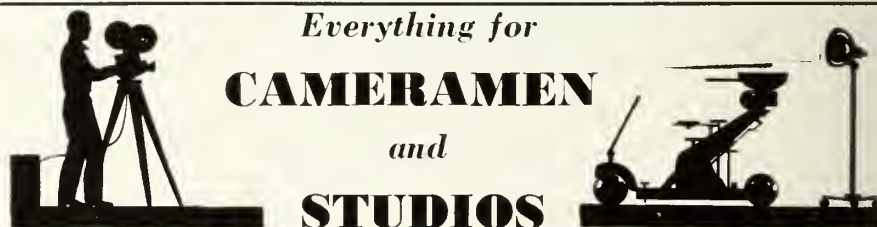
The beam splitter consists of three first surface mirrors behind the lens and three secondary, first surface mirrors immediately in front of the plate. The filters are carried in swing-

ing metal holders immediately in front of, and parallel to the sensitive plate. The camera is equipped with a set of universal filters. For daylight use these are arranged in the order red-blue-green, but for photoflood or flash use the order is changed to blue-red-green. The reason for this is that the central image receives its light from a 90° sector of the lens, the remaining 270° being divided almost equally between the two external areas. That given to green is slightly larger, perhaps by five degrees, than that given to the other extreme which is red or blue according to the light conditions in use.

The balance is unusually good, but it must be remembered that with the constantly varying character of light, particularly, daylight, there must be some variation. However, unless

conditions are extreme, these variations are within such limits that wholly satisfactory compensation can be made in the process of printing.

For too long a time has color photography been regarded as some sort of mysterious rite, understandable only to the initiate! It is time that we recognize the fact that it is merely a sensible, scientific application of sound principles, capable of great simplification it is true, but even today well within the ability of any competent photographic technician. There can be little doubt that the introduction of a serviceable color camera with all of the flexibility of any modern camera, together with its complementary equipment will do much to bring about a sane recognition of the sensible facts about natural color photography.



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A Few Moments With Cinecolor

By W. T. CRESPINEL



CINECOLOR was formed over four years ago, as a successor to Multicolor and somewhat at the insistence of many color producers who had contracts to fill and who had been using the Multicolor process. Cinecolor owns all of the Multicolor patents, some twenty-eight, issued in the United States and foreign countries, aside from additional patents issued to Cinecolor and also patents pending. Cinecolor does not, however, use the Multicolor process.

From the inception, it was the aim of the company to so construct its equipment and process that a much more reasonable release print price could be offered producers and by so doing, eliminate one of the greatest hindrances to the use of color, and after considerable footage had been put through the plant, it was found possible to put into effect a low print price.

About two years later, the company again effected an additional saving in production, which saving was allowed to accrue to the benefit of the producer. This policy has continued until now Cinecolor release prints cost only a little more than double that of black and white, which represents an achievement in the art of color processing.

A further reduction will be effective in the near future.

While at this time Cinecolor does not engage in any productions of its own, it does have a technical staff available to the producer for the purpose of advising on the question of color selection, camera exposure, make-up lighting and color effects and in

general, any question that is potent to color production. This service is made available to the producer without charge.

It is the aim of Cinecolor to remove the mystery from color production and make color photography as simple as normal black and white shooting.

At this writing, experiments are being concluded on a radical development, protected by patents pending, which will make any camera a color camera without any change of any description. This itself will be revolutionary and will apply to any size camera.

While the trade is used to designating color as a two or three color process, meaning prints made with two or three primary colors, this reference, as applied to Cinecolor, is entirely erroneous. Cinecolor obtains a range of colors far greater than any other so-called two color process. It is true that Cinecolor does not, at this time, obtain true colors represented at the indigo-violet end of the spectrum, yet by association these colors do appear to the observer.

Cinecolor is rapidly becoming recognized as the most economical process for all types of color motion pictures, whether they be cartoons, commercial, scientific, shorts or features.

The Imperial Film Company of India has recently purchased the Cinecolor process rights for that country and their first all-color feature is now being prepared. Three other foreign countries are now negotiating for similar rights, and it seems natural to predict that Cinecolor, in the near future, will be represented in most of the important countries throughout the world.

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3¼ cm. x 4¼	cm.		3.75	7.20	No. 20—(2¼x3¼)	2.00
9 cm. x 12	cm.		4.25	8.10	No. M20—(2¼x3¼ metal spool)	2.00
4 cm. x 5	cm.		5.30	10.35	No. 16—(2½x4¼)	2.50
5 cm. x 7	cm.		8.50	16.65	No. M16—(2½x4¼ metal spool)	2.50
8 cm. x 10	cm.		21.00	40.50	16mm AMATEUR MOTION PICTURE FILM	
					50-ft. Roll	\$5.50
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RANDOM THOUGHTS ON NATURAL COLOR PHOTOGRAPHY

(Continued from Page 1)

a satisfactory picture. With color, the scene would be a decided flop. Therefore, before making a color exposure, be sure that there is plenty of color—the richer the better—in the scene. And herein lies one of the limitations of color photography—it does not adapt itself readily to anything and everything. Subjects have to be chosen with care.

The next thing to remember is lighting. As a rule, plenty of light is needed—another limitation. The production of color is dependent, so far at least, upon the use of filters which cut down the light, necessitating long exposures as a rule. By filters I mean not only filters over the lens, but also dyes placed on the film or plate of the color plate processes which act in the capacity of filters. However, with speedier emulsions and faster lenses, we are rapidly getting away from this difficulty of illumination. At present, however, it still remains that sufficient light is required.

Even if poor light were sufficient for photography, it would not readily lend itself to color photography because colors are brilliant or dead in accordance with the light. To illustrate, an outdoor scene on a dark, cloudy day would certainly result in a poor color picture, whereas a bright, sunny day would reveal the colors in all their glory.

After that comes the matter of lighting itself. In black and white photography, we strive for fancy "effect" lightings to create depth and a sense of roundness. In color photography, all this effort would be wasted, for be it known that in color photography, contrast is secured by **color** and not **lighting**. When shooting color, flat lighting is the rule rather than the exception. Here we have a difference in technique, for as you will recall, flat lighting is one of the first things the beginner is taught to avoid—in black and white photography. The color picture depends upon color for almost everything, whereas the black and white picture depends upon cross and back lighting for effect. Back to the beginner's class when you first work with color.

Possibly the most often asked question about color photography is "how can it be reproduced in newspapers and magazines?" The **National Geographic** magazine is always pointed out as the most successful user of color photographs, and many wonder how they are able to do it so well. The answer is simple. **National Geographic** staff cameramen use 4 x 5 and 5 x 7 cameras and shoot color plates such as Agfacolor, Lumiere Autochrome and Finlay, with now and then a splurge on Dufaycolor. It will be noted that each of these is a color plate in which the color is right in the plate itself—in other words, not a two or three color separation process. **National Geo-**

graphic maintains a most complete and elaborate laboratory and the plates are merely sent to the engraver's plant as they are, the engravings being made direct from the plates. Not so long ago this was considered quite a feat, but today many other magazines are doing it right along, notably *Fortune*.

Dufaycolor, with its screen grating, offered a difficulty in the elimination of the screen, but the engraver's wit solved the problem. Today it is not a troublesome matter to "shake out" the screen at all, and as a result, Dufaycolor has been used successfully for reproduction purposes. As time goes on, more and more color pictures will be seen in the magazines.

Perhaps the best way to learn color is to get the three primary filters (Wrattan A, B and C5—red, green and blue) and shoot three panchromatic films or plates which are correctly balanced, such as the Ilford or Defender XF, and make one negative through each of the filters on a still-life subject. Three black and white negatives will result on development. If these negatives are now printed—by contact or enlargement—onto the Chromatone sheets, and the procedure as outlined in the Chromatone book followed a complete, perfect natural color print will be your reward. This method will show the fundamentals of color photography. If a transparency is all you want, the matter is simplified by merely loading your camera with one of the color plate processes—such as Agfa, Dufaycolor, Lumiere Autochrome Filmcolor or Finlay—and shoot. On processing, which requires in most cases the reversal process, a color film or plate will result. This can be used as a lantern slide if the negative size is suitable, or may be viewed by holding against the light. There are several methods available now whereby paper prints can be made from all color processes, but in most cases these are too involved and complicated to attempt except by those skilled and experienced.

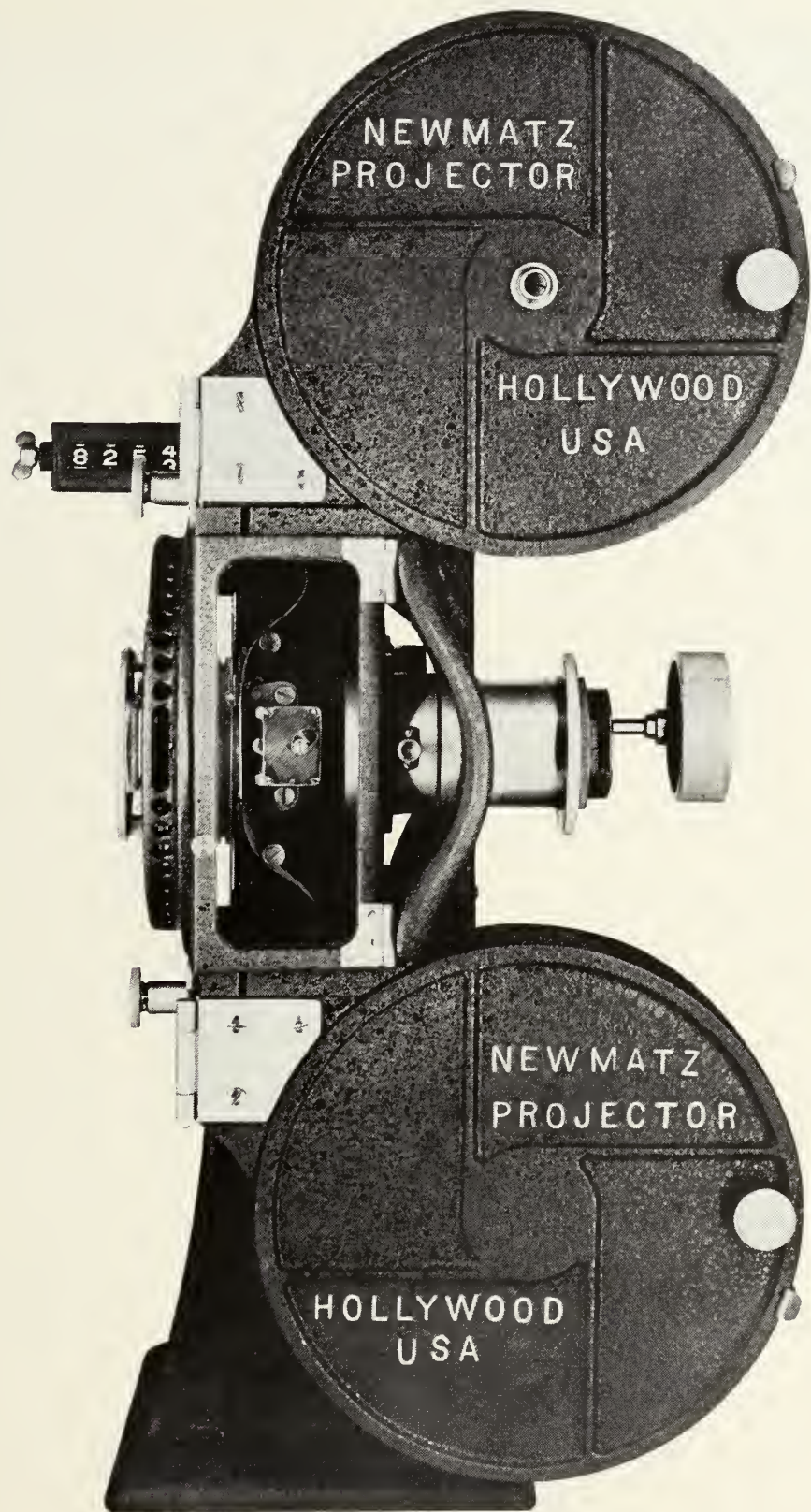
What appears to be the quickest and most satisfactory for the greatest range of uses is the employment of a "one-shot" camera such as the Mikut, for with three negatives you can do an awful lot of experimenting—and isn't color photography still mainly experimental?

One thing is certain. Successful results do not come flying into the lap of the novice. It takes work and experimenting to turn out consistently good color results. By sticking to one process long enough to fully understand its characteristics, one can become more or less expert at it. By changing around from one to another, one quickly becomes a Jack of all processes and a master of none—which is as good as being no good at all.

I.A.T.S.E. VISITORS FROM THE EAST

During the month of May Pacific Coast headquarters of I.A.T.S.E. had the honor to entertain William Bioff, personal representative of President George E. Browne; Harland Holmden, third vice-president and O. M. Jacobson, International Representative, of Tacoma. President Browne is not expected on the West Coast before July.

C. P. Cregan, auditor I.A.T.S.E., has returned to Chicago, after several weeks' sojourn in Hollywood. He was accompanied by Mrs. Cregan and their children. Their many friends will be glad to know that they expect to return during the summer.



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HOLLYWOOD, CALIFORNIA

KELLER-DORIAN THREE-COLOR PROCESS

(Continued from Page 13)



This Kelly-Dorian close-up of Marlene Dietrich was made using less light, according to Josef von Sternberg, than he normally used filming her in black-and-white.

Dorian color camera. In the tests made during the research on the process (here and in New York), Pathe, DeBrie, Mitchell and the new magazine-type Akeley cameras have been used with complete success. At present, the studio-type Akeley is preferred because of the advantage its 230 degree shutter offers in offsetting the light-absorption losses of the tricolor filter.

The lens used is of special design, to coordinate with the film-base lenticulations. It is of the convertible type, and works at f:1.9. A fixed front element is used in conjunction with a variety of interchangeable rear elements, which give a wide range of focal lengths. The filter is mounted at the center of the lens, and a supplementary optical unit is installed directly before the photographing aperture to eliminate color-fringes in the out-of-focus parts of the picture.

Due to the nature of the process, the reversal process is used rather than the conventional negative-positive system. This method is well understood, and introduces no complications. Standard developing machines can be converted to reversal-processing with only minor modifications. As the film exposed in the camera is reversed into a positive, there is the distinct advantage of being able to screen "rushes" in full color within three hours after a scene is shot. In other words, instead of having to wait overnight, as in black-and-white, or from several days to a week, as in most color processes, after filming an important sequence to see it on the screen, the Director and Cinematographer of a Keller-Dorian color picture can see their work screened in full color two or three hours after shooting it.

Release-prints are made, either optically or by contact, on lenticulated, reversal-type positive stock. The quality of the prints is entirely comparable to that of the original. Since the printing is a simple photographic operation, the results are consistent and economical.

For projection, all that is essentially necessary is the use of the three-color filter on the projection-lens. It is only natural that the best results will come from the use of a modern projector, with a fast lens and an efficient lamp.

As in most other color processes, satisfactory screen-illumination on the huge screens of the country's largest theatres was for a time a problem. Dr. Capstaff's recent researches, however, have solved

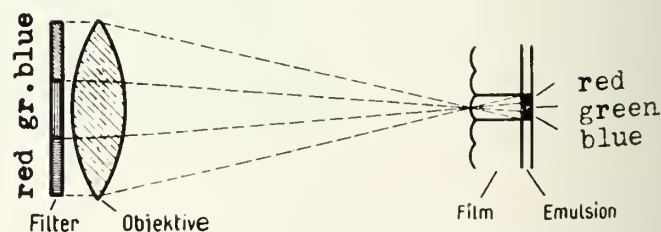
this problem in a simple and conclusive manner. Even with black-and-white, many of these theatres lacked really adequate screen brightness, yet it was believed impossible to gain an increase in light without danger to the film, and altogether excessive amperages. Dr. Capstaff, after making useful gains by means of lightened print-densities and lighter filters, attacked the problem basically. By a combination, the exact nature of which cannot be revealed as yet, of more efficient carbons, a new and vastly improved mirror, and a speedier optical system, he increased the light-output by 380 per cent, while at the same time reducing the amperage used from an average of over 120 Amperes to 85 Amperes.

In photographing Keller-Dorian color, the same fundamental technique familiar in monochrome cinematography is used. Normal incandescent lighting units are employed, and the increase necessary for color averages from 30 per cent to 50 per cent more light than for black-and-white. How this increase is obtained depends on the technique of the individual cameraman; the majority of the Paramount cameramen who have made color tests with the process simply use their normal black-and-white lighting, but with the lamps "pulled down" to a more concentrated beam.

Virtually all of Paramount's outstanding cameramen have photographed Keller-Dorian color tests. Their experience has proven that any capable cinematographer can make successful color scenes by this process with only a few hours' instruction and explanation. And as each cinematographer can apply his individual technique, virtually unchanged, to color photography, artistic individuality does not become stultified in the transition from black-and-white to K-D color.

No type of special-effects cinematography presents any insuperable problems with this process. Optical printer and matte-shot effects can be achieved with the same facility as in monochrome. The background-projection or "transparency" process appears equally feasible, especially in view of Dr. Capstaff's recent developments in projection illumination, which should assure ample light for the use of relatively sizeable background-screens.

Color-rendition is extremely faithful; the flesh tones are especially noteworthy, as they achieve a naturalness impossible of attainment in subtractive processes. Color experts have also remarked that the Keller-Dorian process is unique in its reproduction of true whites and true blacks. There is, too, a remarkable increase in shadow-detail when com-



How the filter and embossed lenticulations on the film produce the color.

pared to most color processes. The relative brightness or softness of coloring is completely controllable; soft pastel shades may easily be had, while bright colorations are reproduced with neither unnatural effect or eye-strain.

Since the process is strictly a matter of photographic reproduction, there can be none of the "fuzzi-

ness" and color-bleeding which so often accompanies dye-image printing. The definition obtainable is on a par with the best black-and-white. In this connection, it may be mentioned that tests using normal diffusing media have shown that diffusion can be as effective in color as in monochrome.

The embossed lenticulations do not interfere with the definition, and they are not evident in the projected picture. These lenticulations are so extremely fine that even when projected on large screens, they are no more visible than the perforations in the screen through which the sound passes from the loudspeakers to the auditorium. At the present time, a standard of 29 lines to the millimetre (724 per inch) is used, while if conditions should at any time warrant it, still finer embossings (up to 875 per inch) can be used without making any change in camera or projection equipment.

Recording and reproducing sound on the embossed film has presented no problem. According to the latest tests made by critical sound engineers, ground-noise due to the embossed film is practically identical with that now occurring in normal black-and-white production. Recording through the film-base on reversal film, far from being a disadvantage, has proven to be an advantage. As a direct result of the recording tests made with Keller-Dorian, the Paramount Sound Department is now changing over from the conventional negative-recording methods to the use of reversal-type recording stock, which is exposed from behind, through the film-base. According to the Paramount engineers, this has resulted in better sound-quality, with finer grain and a more precisely-striated track.

The problem of make-up for Keller-Dorian color is extremely simple. As the rendition of color is wholly accurate, make-up does not have to be distorted to correct an unbalanced color-rendition. In the many make-up tests made, the best results followed the use of only a very light street make-up, and satisfactory results were had with no make-up at all. Wally Westmore, head of the Paramount Make-up Department, has evolved a standardized system of make-up for the process, using the DeLong (Elizabeth Arden) products. He has stated that the best test of whether a make-up for Keller-Dorian color is correct is a glance in a mirror; if an actress feels that her make-up looks natural when she inspects it in her mirror, it will be satisfactory when she sees it on the screen. Incidentally, it may be remarked that a player wearing a satisfactory Keller-Dorian color make-up can wear it on the street without appearing at all "made up for the studio."

As might be expected from all of the foregoing facts, the Keller-Dorian process is the most economical three-color method yet achieved. Since essentially standard black-and-white methods and equipment are used throughout, the item of equipment can be figured as identical with the equipment cost of black-and-white. In many instances, existing black-and-white equipment can be used; if new equipment of any type is desired, its cost will be substantially what the same unit would cost if it were to be used for black-and-white. A production unit photographing a Keller-Dorian color picture can work exactly as efficiently as it would making the same picture in black-and-white. The extra costs for art-direction and costuming in color would be approximately the same for any color process, and depend entirely upon the individual producer's policy. All of the tests made at the Paramount Studio have used standing sets from black-and-white pictures, with the actors either in street attire or in cos-



Enlarged from a Keller-Dorian color frame; photographed by Charles Lang.

tumes used for regular black-and-white films; the results have gone far to discount the need of any extraordinary expenditures for special "color" settings and costumes.

The purely photographic costs for the process are very little higher than the cost of good black-and-white. Film, processing, "rushes" and release-prints for an average \$400,000 feature produced in Keller-Dorian color should not exceed the cost of the same items for a comparable black-and-white production by more than \$30,000, even under the present, semi-experimental conditions. With volume production, the costs should be appreciably lowered, ultimately reaching a point very close to, if not identical with today's monochrome costs.

For exhibition, all that the average theatre will need will be the projecting filter. This is especially true in view of the fact that with the industry emerging from the depression, an amazing number of theatres have been modernizing their projection equipment to secure more efficient projection of black-and-white. During 1935, for instance, one equipment firm alone installed more than 1,800 new, modern equipments in theatres in this country. In most cases, these equipments will already be satisfactory for first-class projection of Keller-Dorian color. In theatres where the screen is of more than average size, the new optics devised by Dr. Capstaff, which increase the projecting light 380 per cent, can be installed for a negligible cost; and as such optics will be incorporated shortly in the newer types of projecting equipment, theatres re-equipping their booths in the future will find themselves ready for Keller-Dorian color with no additional expense.

Very few showings of the process have as yet been made. A formal showing, however, took place in New York, before activities were transferred to the coast, when the process was demonstrated to the New York Chapter of the Society of Motion Picture Engineers, 360 strong. This group, by a unanimous vote, expressed its appreciation to Paramount and to the writer, and expressed its admiration of the process. An informal showing of the process recently took place before a meeting of the Art Directors Section of the Academy of Motion Picture Arts and Sciences, where the process again received a most flattering reception. Showings before other local bodies are planned for the near future. The members of the Paramount camera staff, nearly all of whom have made tests with the process, are uniformly enthusiastic, and such players as Marlene Dietrich, Claudette Colbert, Gary Cooper, Cary Grant, and others who have appeared in these tests, have shown equal enthusiasm.

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LIGHTING EQUIPMENT FOR NATURAL-COLOR PHOTOGRAPHY

(Continued from Page 17)

tent. In black-and-white, Miss Dietrich's bloneness, the blue dress, and the gray background, would demand a decidedly contrasty lighting. In Technicolor, the natural color-contrasts, enhanced by a normal lighting, separate the three exactly as our vision does.

Experience on this picture, as on others, is proving emphatically that color does not demand inflexible adherence to a set style of lighting. The artistic individuality of the cinematographer, not the process or the fact that the picture is being made in color, is the governing factor. As color photography becomes better understood, and new and more efficient lighting tools are introduced, the problem of lighting for color grows less and less; ultimately, it undoubtedly will vanish, and become as completely accepted a commonplace as is lighting today's black-and-white.

S. M. P. E.

The Hotel Sagamore, Rochester, New York, has been selected for Convention Headquarters for the Fall Meeting of the S.M.P.E. to be held October 12 to October 15, according to W. C. Kunzmann, Vice President in charge of Conventions. Mr. Kunzmann will be in Rochester the week of May 25 to line up the fall meeting committees and complete preliminary arrangements. This will be the first Society of Motion Picture Engineers' Convention to be held in the camera city since 1922.

Miniature Camera and Color

By GILBERT MORGAN

What about color? Can it be printed on paper? How does it look? Who does it? Such are the questions being asked every day all over the country. The color interest is aroused again as it has been many times in previous years, but this time the present group which raises the questions is out to obtain results. If color is to be had on the movie screen, then why not on paper as well?

Today color is available for amateur and professionals using the miniature cameras, such as the Leica and Contax. Color photography has long been in the minds of many, but only recently through the constant development of colored film emulsions and equally constant development of miniature cameras with fast lenses of shorter focal length has this aim been partially reached with a material reduction in cost.

A year ago Dufaycolor film was introduced for use in the miniature as well as the larger cameras. This film embodies the old tri-color screen principle and is probably the most simple to process of the various films on the market, it being a straight reversal process. Under normal conditions in daylight no filters or special lenses are necessary to produce colored transparencies since the tri-color elements of the screen serve as the filters for the primary color separations. However, where there is an abundance of ultra-violet light the use of a compensating filter is advisable so that the pictures are not dominated by an excessive bluish cast. Blue filters are necessary when artificial Mazda or photoflood lighting is used for the picture. These filters overcome the excess of red rays given out and balance the colors. As with all color films correct exposure is of prime importance for true color values. Under exposed pictures will produce, as most of us have found out, very little on a color film, everything going a dark blue, almost black, while over exposed pictures will give the color a faded or washed out appearance.

Besides Dufaycolor film there are other miniature color films on the market, such as, Agfacolor, and the Lumiere color film which give good results. It is the hope of all color enthusiasts that Kodachrome, available at present only in 16mm and 8mm, will be out in the 35mm size. (The grapevine telegraph says that it will be only a matter of one or two months. Members of the Eastman Co. are at present testing the film in Leica and Contax cameras before placing Kodachrome in the hands of the public.)

Three color separation negatives on Agfa, Eastman, and Dupont panchromatic emulsions have been used for some time but until now there has been no satisfactory and simplified process by which color prints could be made on paper. By the new

Ruthenberg Colorstil Process prints are easy to make at a low cost. Using the Colorstil Process prints can be made from Dufaycolor, Kodachrome, and three color separations. Results: three color separations by far the best. Separation negatives are made by filtering the picture three times which must naturally be a still subject—a red filter is used for the blue green separation, a blue filter for the yellow, and a green filter for the magenta. Usually the three separations can be taken with a miniature camera within approximately three to four seconds.

A new one-shot camera, the Mikut, at a more nominal price than most of this type, is expected to be on the market in America soon. The Mikut, a miniature snap camera, makes three 5 cm by 5 cm separations on a single glass plate 5 cm by 15 cm with the one exposure. This will enable action pictures to be taken in color with far less bulky equipment than heretofore.

Once the separation negatives have been made natural color prints are then possible by the Colorstil Process. Color separations can be made from Dufaycolor or Kodachrome by breaking the colors down into three separations. In this process there are three films dyed in the complementary colors. Each is exposed to the corresponding separation negative and after development, fixing, and bleaching of the silver image the films are super-imposed upon each other in a white enameled tray for registration and color balance. If any one of the three colors is too strong it can be reduced by washing in hot water, the dye being only partially solvent in hot water. When satisfactory color balance is obtained the film is transferred to a white glossy, matte, or semi-matte paper by stripping off the film backing of the three films, one at a time.

It is possible to make a dozen color prints at the same time once the separations are made and the exposures for the corresponding dyed films have been correctly determined. Elapsed time from the moment that the separations are ready for printing to the finished print is not over two hours.

For best results with the Colorstil Process good filters, a good photo electric cell exposure meter and precision work are above everything else most necessary. In making color separation negatives strive for a soft and not a harsh contrasty negative.

This is only a brief sketch of things being accomplished in color. There are other color printing processes and color films which have their merits, and I dare say that in the next few years those men who have been working with color photography will see the grand realization of the fruits of their years of labor.

BUCK JONES HAS A NEW VEHICLE

"Ride 'Em Cowboy" is Buck Jones' current vehicle for Universal production. Leslie Selander directing, an assistant cameraman of other days.

Allen Thompson is first cameraman; Herbert Kirkpatrick, operative cameraman; Eddie Jones and Buddie Weiler, assistant cameramen; Arthur Marion, still artist.

"Ride 'Em Cowboy" is somewhat of a departure from the usual Western of Buck Jones, but those in the know think that the handsome star of the West-

erns will be sure to score a great success in it.

The time is about the debut of the automobile and one of the thrills of the picture is a small time auto race.

There will be plenty of horseflesh, six guns, hero stuff, etc., and the Dubrox Riding Academy of Hollywood will supply the equine action.

Admirers of Buck Jones should read a sketch of him recently published in Collier's Magazine. He's quite a citizen.

CINEMACARONI

(With Sauce for Those Who Like It)

By ROBERT TOBEY

HOLLYWOOD HONEYMOON

(A novel novel of a thousand and one nights in a daze)

By
R. THRITIS

Synopsis of preceding installments:

There's been only one issue since I didn't give you any synopsis last time, so I don't see what you have to gain by no synopsis of last issue. So I won't bother with not any. Pick up the pieces from there.

CHAPTER XX—THEME SONG

"And now the problem is," remarked Perri-wether Murgle, "how do we get down from here?"

"Maybe you mean the theme song from my last picture," said Lili brightly. "Where Do We Go From Here?"

"Don't be dense," snapped Perri. "Where Do We Go From Here" is an old-timer. Your song was 'Where Do We Go From Love'.

"That's the one I mean," answered Lili. "Let's sing it!" And she sounded a note and began to hum the seductive melody in her \$5,000-a-week contralto. (That is, if Flamboyant Films, Ltd., hadn't cut her off salary for being A.W.O.L.)

When La Liverblossom sang, there was no resisting the appeal in that alluring voice, so Perri, hypnotized, sang along with her. He had once been a church singer. Just now he was an apartment house singer. Flat.

Even the ghost attempted to join in, but his slow sepulchral voice couldn't keep up with the lively tempo of Lili's song, so he contented himself with a low saxophone moan at judicious moments, now and then clanking the bracelet on his wrist in a cymbal effect.

After finishing one stanza and a couple of choruses, Lili and Perri looked up, sensing someone nearby. There in the kitchen passageway were Willy and Nelly Nilly, enraptured by the music, leaning on the wall and gazing fatuously at each other.

"I can certainly do something with that," said Perri, and muttered under his breath, "The fatuous in the fire."

Aloud he said, "Get back into the kitchen, you two. I can smell the fish burning."

"That's funny," said Nelly Nilly. "It's still in the sink."

"Get back in the kitchen anyway," barked Perri. "We're trying to escape, and we certainly can't do it if you're going to stand there and gawk at us."

"Excuse us," said Willy Nilly, and grasping Nelly by the arm, he led her back into the kitchen.

"Come on," said Perri. "Let's go."

"Just one more chorus," pleaded the ghost.

"Okay, toots," said Lili, and started to sing again.

The ghost jumped and clicked his heels with joy.

"Ah, the Fred Astaire influence," exclaimed Perri.

Lili interrupted herself to sniff. "Remember you're working for Flamboyant Films, will you, and not for R.K.O. Publicize our own stars. What's the matter with Frankie Fleetfoot?"

Before Perri could reply adequately, there was a hollow tapping sound from somewhere in the lair. It seemed to come from all around them. The ghost began to moan and clank his bracelet.

"Don't carry on so," said Murgle. "What are you giving us—professional jealousy?" He knelt down beside the eggs underneath the heating pad. Faint sounds came from inside the shells.

"Let's get out of here," Perri said, rising quickly. "If those eggs hatch while we're here, there'll be the devil to pay. And I haven't a cent."

"Okay," said the ghost. "I'll carry Lili. Can you still fly?"

"Of course," said Perri.

Without further ado, the ghost picked Lili up and set out across the desert. In a flash he was out of sight.

Perri teetered on the edge of the Eagle's lair. The precipice took a sheer drop of two thousand feet below him. Perri didn't care to follow suit. Could he still fly—or had he lost his magic power?

Our hero drew a deep breath, jumped, and flapped his arms as he had done before. His arms seemed like lead, and he dropped like a plummet. Fortunately he managed to catch hold of an outjutting rock twenty feet below. And there he hung.

(What can Perri do? Potty and Lili are out of carshot. If Perri yells, he will attract the vicious Eagle and his mate. Our hero is really in a spot. Blotter next month.)

PROSPERITY POEM

What with all his Mickey Mouse cartoons
And Three Little Wolves and Silly Symphonisney,
Walt Disney

Is certainly keeping very bisney.
Isney?

by the prosperity poet,

R. THRITIS.

Warning on a theatre marquee:

DON'T GET PERSONAL
SPECIAL INVESTIGATOR

KNEECAP REVIEWS

(No space left on my thumbnails)

"UNDER TWO FLAGS." A story of the French Foreign Legion and the desert that tends to prove all the sand isn't under the horses' hoofs. Claudette Colbert, although not starred, carries off acting honors as the fiery, smiling little "Cigarette." If her final scene in the picture doesn't bring a lump to your throat you just weren't looking at the picture. Ronald Colman, barring a slight woodenness, is splendid as the man whom all the shootin' is fur. Victor McLaglen is up to snuff in an Informerish role. Rosalind Russell and Nigel Bruce perform creditably.

Frank Lloyd's direction is responsible for the great dramatic and emotional power of the piece. Thrilling, breathtakingly real battle sequences were under direction of Otto Brower. Photography by Ernest Palmer and Sidney Wagner is well above average generally, while some of the long shots in the desert sequences possessed a richness of tone and an awe-inspiring beauty that classed them as masterpieces.

* * *

"TROUBLE FOR TWO." Trouble for too many exhibitors, I'm afraid. Seems to have all the elements that should make good box-office; trouble is it has too many of them. It commences as a mythical kingdom romance, and gives no indication of being a blood-and-thunder affair (unless you know it is adapted from Stevenson's "The Suicide Club"). Film suddenly becomes the latter, ending up in a Doug-Fairbankish Robert Montgomery matching wits—and rapiers—with a ghoulish old man rebuilt from Stevenson's original conception of the President of the Suicide Club.

Picture suffers from, rather than being improved by, the changes in the original story. Plot becomes much more complicated. Chief advantage to the picture is its presentation of Montgomery in a type of role that well becomes him—a debonair, reckless sort of fellow (physically here, whereas previously only in dialogue). Maybe Bob will do more of this. We could use a new Fairbanks about now.

Direction by J. Walter Ruben is uneven, or maybe it's the fault of the script. Rosalind Russell does as well as she can with a strange part. As for Frank Morgan— isn't he always good? Photography by Charles Clarke is effective.

* * *

"THINGS TO COME." England's Jules Verne and her greatest film producer got together and the result is highly imaginative, stimulating, impressive. H. G. Wells conceives a world nearly annihilated by war and ensuing pestilence, rebuilt nearer to the heart's desire by unrestrained science. Alexander Korda spared no penny and no effort to make this dream real as possible. Understanding direction is by William Cameron Menzies.

Aside from the original conception, excellent design and art direction by Vincent Korda and superb effect photography by two well-known Americans, Harry Zech and Ned Mann, help keep the plot structure sound and coherent, instead of the inarticulate mass it easily could have become. However, the average audience will doubtless feel that mechanistic aspects have been too strongly stressed.

Raymond Massey gives a powerful portrayal of the central figure, John Cabal, leader in the fight for progress. Ralph Richardson contributes the other outstanding performance as "The Boss," feudal leader of the reverted "valley people," and a delicious satire on some of our better dictators of today.

"LADIES' LAKE." If you get a chance to see this imported French production, called "Lac Aux Dames," don't pass it up. It is intriguing, a departure from our current American themes and methods, and handled with less restraint. Salient are the gorgeous scenic shots and the wistful and tender beauty of Simone Simon. Marc Allégret has directed with a sophisticated wit. Jean Pierre Aumont is quite handsome and proficient in the part of the swimming instructor.

"SMALL TOWN GIRL." A very pleasant piece of film fare employing red-headed Janet Gaynor and handsome Robert Taylor to fuss and make up and generally entertain the folks. In this tale of a small-town girl who yearns for the great city, Gaynor is big-eyed and innocent as usual, even if Bob Taylor doesn't think so when she apparently ropes him into a sudden marriage. The way they work out their problem makes a swiftly-moving, well-mounted story. Dialogue and humor do not pretend to be ultra-smart; are of the homey type. Only criticism is of a couple of moldy situations.

Story is full of realistic touches, probably due to excellent direction of William Wellman. Andy Devine provides laughs of his own special brand. Isobel Jewell does her best with a small, earthy part.

COOKERY DEPT.

Into the Frying Pan

Eleanor Powell and Nelson Eddy
Cesar Romero and Virginia Bruce

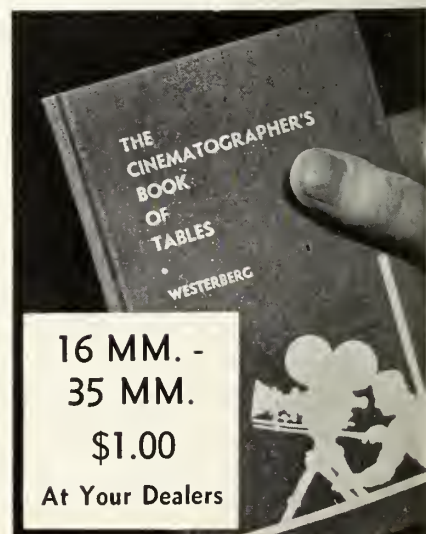
Out of the Fire

Ginger Rogers and Lew Ayres
Arline Judge and Wesley Ruggles

HOLLYWOODCUTS, by the Shovel Boys (they dish the dirt). * * * The latest romance on the broiler is that of Ginger Rogers and Jimmy Stewart, now that Ginger and Lew Ayres have sundered. Neither Ginger nor Jimmy will talk about it (except to each other). * * * Helen Ferguson, former screen star now turned publicity agent (and doing darn well too—she numbers Fay Wray, Dolores del Rio, Fred Stone, Anita Louise, Joel McCrea, Gene Raymond, and Jeanette MacDonald among her clients) goes to New York for a few weeks rest, accompanied by her husband, Dick Hargreaves. * * * Jean Harlow is selling her big house in Holmby Hills. There might be a reason. * * * What star went to Ensenada all by her lonesome but her b.f. who was supposed to stay right in town couldn't be located for days?

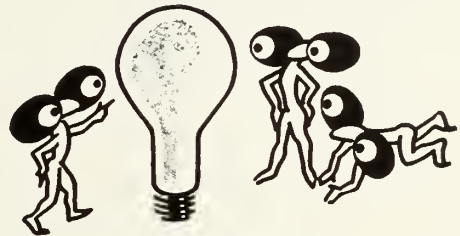
Big turnout at the new and fashionable West Side Tennis Club for a swimming meet sponsored by Ida Koverman of M-G-M. Chief piece of fare was an informal diving and swimming exhibition by Johnny Weissmuller and that priceless water comedian, "Stubby" Kruger. * * * Roger Pryor was as busy as an ant, taking pictures with his Leica. Roger goes in thoroughly for amateur photography. He even uses a professional light-meter to judge his exposures. * * * Claire Trevor was among the onlookers, looking very fetching. * * * Nancy Carroll very fetching too, in a grey tailored outfit with grey hat, shoes, stockings, and accessories, in interesting contrast to her auburn hair and white skin. * * * Eleanor Whitney very smart, chinning with cute Arline Judge. * * * Cute Grace Durkin and her sister Gertrude dropped in late, escorted by Henry Wilson and Dennis Moore. * * * Igor Gorin among the onlookers, also Wendy Barrie, and Robert Warwick. * * * Of course Paula Stone was there, as she is on the entertainment committee. * * * Margaret Sullivan, quite gay, attended alone, her arm out of its splints but well wrapped in bandages. * * * Cesar Romero among those present, and SO attentive to Virginia Bruce and little Susan Gilbert.

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—HOLLYWOOD—

8TH YEAR

JULY, 1936

VOL. 8
No. 6



"THEY HAIL THE HERO WHO CHARGES THE GUNS"

JAMES N. DOOLITTLE

From the camera of one of the cleverest still artists in the world. It is the photograph of a tablet modelled in clay by the distinguished sculptress, Ella Buchanan, of Hollywood. One of the eight subjects in bas relief made by Miss Buchanan to illustrate a book written by a Hollywood author. All photographed by Mr. Doolittle.

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PALS FOR LIFE

A lioness and a dog were brought up together by Col. Selig, at Selig Zoo, and they lived together long and happily, but they were not the pair here depicted. The puppy spaniel and the lioness here presented to the reader are the property of Otto H. Stolberg, of Oakland, California, and they are offered to our still artists as a suggestion of what may be done in that line.

INTERNATIONAL PHOTOGRAPHER

MOTION PICTURE ARTS AND CRAFTS

Vol. 8

HOLLYWOOD, JULY, 1936

No. 6

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COLOR



Perfection in color is not yet here, but it is rapidly approaching and the International Photographer is able to say right now that at least four systems or processes are bunched in the home stretch and others, too numerous to mention, are strung out behind.

These four, which it had been hoped to proclaim in this issue as having reached the goal, begged further time fearing pre-mature publicity, but as they say in the vernacular—it won't be long now.

All this researching in garages, cellars, attics and laboratories has not been for nothing and it is interesting to note that Hollywood is proving to be the pioneer—the Tek-Nik Town—of this great pursuit of color.

Hollywood is color-minded with a vengeance. Watch for announcements.

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England, It's Technicians and the Film Industry

By LAWRENCE ALLEN

Written Especially for the International Photographer



OUR American brothers are now aware of the Association of Cine-Technicians which exists in England for the protection of studio workers, as covered in Hollywood by Local 659, I.A.T.S.E. and M.P.M.O. You know our attitude toward foreign technicians (thanks to a fair article by Phil Tannura) and it is sincerely hoped that all American technicians understand that A.C.T. is not opposed to the entry of real ACE men into the British industry, provided they give our fellows a chance to learn how to be Aces. All the same, we have in England men whom we consider to be ACE technicians in the highest degree.

What A.C.T. is Doing to Improve Conditions in the Industry

There exists in England a "Quota Act" which was designed to aid the English film trade. Before this ACT came into being the industry was dying of strangulation by foreign competition. During 1925 only one major film was made in England, surely a proof that the industry, as such, was nearly dead. In 1927 the QUOTA ACT was introduced. A.C.T. claim, quite rightly, that this act is responsible for the huge film industry that exists in England today.

We technicians realize that this ACT has many shortcomings. It is held responsible for the production of films that are so bad they cannot be shown. These are made by certain producers just to fulfill their quota and as "commercial" films are a dead loss.

The conditions under which these Quota Quickies are made are fantastic, to say the least: e.g., seven reels in six days, eighteen hours a day for two weeks on end, and other such crazy conditions are worked by English technicians on these "Quickies."

The British Board of Trade is carrying out an inquiry as to the advisability of framing a new quota act or scrapping it entirely. The present Act expires in 1938. The A.C.T. gave evidence before this Board and urged the drafting of a new quota act with more exacting conditions and penalties.

One of the points put forward by the Technicians through A.C.T. was for the fixing of a minimum of \$48,000 to be spent on any picture before it could qualify for quota registration. Under the present Act 75 per cent of monies spent on wages must go to Britishers such as stars and labor, i.e., technicians and semi-skilled labor.

The Technicians ask that 75 per cent of monies should be spent on wages paid to British Technicians. The word "technician" defined thus: "Persons employed in the following departments: Camera, Sound, Scenario, Editing and Cutting, Art, Floor and Production (Assistant Directors, Associate Producers, Production Managers, Script Girls, etc.), Stills, Musical, Make-Up, Sound Maintenance, Projection."

The work A.C.T. is doing on the Quota Act inquiry is a long wanted and highly desirable task, as there have been a lot of breaches by some pro-

ducers in the carrying out of this Act. These breaches are too numerous to mention.

The Standard Agreement

A.C.T. has set itself the task of drawing up a Standard Agreement that will be reasonable and fair for the industry as a whole in England. Such a job is extremely difficult, as there is no uniform rate of pay and no uniform conditions, in fact, these are chaotic. However, A.C.T. has almost completed drafting the Agreement; that done, it will be presented to the studio executives for signature. This, they realize, will probably be the hardest task of all.

Probably the worst working conditions which exist are in the laboratories, where A.C.T. is rapidly approaching 100 per cent membership. That figure has been reached in the last six months. In this section we have some of the real old-timers who know the work from "A to Z", including optical printing, which they have done since it became the vogue. These people need an agreement more than anyone else. They have drawn up their own for A.C.T. to present; it is most reasonable and should raise no objections with any fair-minded official.

The A.C.T. Technical Research Committee

A.C.T. have established a committee for the purpose of keeping all its members informed concerning new apparatus and processes which are of interest. This committee will publish abstracts each month relating to the latest technical discoveries. The publication will be a world wide review of the industry and should be of great value to its members. This committee will be responsible for the organization of all lectures to be held during the winter months under the aegis of A.C.T.

Another duty of this committee will be to formulate some scheme of apprenticeship, an important subject, as at the moment there is no organized system of entry or of teaching the new blood that is bound to come into the industry. Some form of control is badly needed to prevent the flooding of the trade with these would-be's, sons of so-and-so, etc., who stay in the industry for two or three months for the thrill of it.

I have already outlined part of the work that A.C.T. is doing for its members and the industry. There are still other problems to be or in the process of being tackled, but as A.C.T. has only just recently found its legs it does not intend making them "bandy" by running too soon.

The following is a brief outline explaining the growth of A.C.T.: Formed in 1933 with about 100 members; had stormy days in that year. In 1934 it claimed 98 members; still more stormy days. 1935 started off with 88 members and a new organizer. Now we can boast of 1,100 members, sunny days and members still rolling in. These conditions are similar, I suppose, to those experienced by the Local 659 when it first started.

As you, our American Brothers, got that 100 per cent organization, so will we. At least that is our AIM and OBJECT.

Motion Picture Sound Recording

CHAPTER XXVI.

IN the three preceding chapters, we discussed the design of a basic amplifier for operation from direct current supplied by batteries, the associated input and output circuits, an arrangement for measuring plate current and grid and plate voltages with a single meter, formulas for meter conversion and range extension, and the applications of this high-grade amplifier. In this chapter we continue that discussion by showing how that amplifier may be improved in design and adapted to operation from an alternating current source.

The Improved Amplifier Circuit

In Figure 1 may be seen the diagram of an improved model of this amplifier that is designed to operate entirely from an a-c source; yet this arrangement will provide amplification of sufficient quality and freedom from hum to permit it to be used as a recording amplifier.

It will be noted that the chief difference between this amplifier and the original basic amplifier, disregarding the power supply, lies in the grid and plate filtering of each stage and in the method of securing grid bias voltage for the tubes. The jacks for the single milliammeter, as discussed in the preceding chapter, should be included in this improved amplifier, particularly those jacks in the plate circuits of each stage; but in order to simplify the diagram they were omitted.

The same components are used throughout this

amplifier as were used in the original basic amplifier, the changes that have been made being entirely from the addition of other parts for the purpose of reducing the possibility of interaction between the stages of the amplifier due to common coupling. The quality of amplification of the original amplifier will be equal in every respect to that obtained with this improved model, but the original basic amplifier had the very great disadvantage of employing batteries for its power supplies.

Need For Grid Circuit Filtering

Beginning with the first stage of the amplifier diagrammed in Figure 1, it will be noted that there has been incorporated in its cathode and grid-return circuits resistances of 2500 and 100,000 ohms respectively and a condenser of four microfarads. The 2500 ohm resistance is for the purpose of providing grid bias voltage for the tube in a manner that will be discussed later; but the 100,000-ohm resistance and the four-microfarad condenser together comprise what is known as a grid filter.

This grid filter is necessary only because all three of the stages of the amplifier receive their plate and grid voltage from a common power supply. If separate C bias batteries were used, as in the original basic amplifier, this grid filter (and the grid filter in the second stage of the amplifier) would not be necessary.

Since a common power supply is used, if the grid

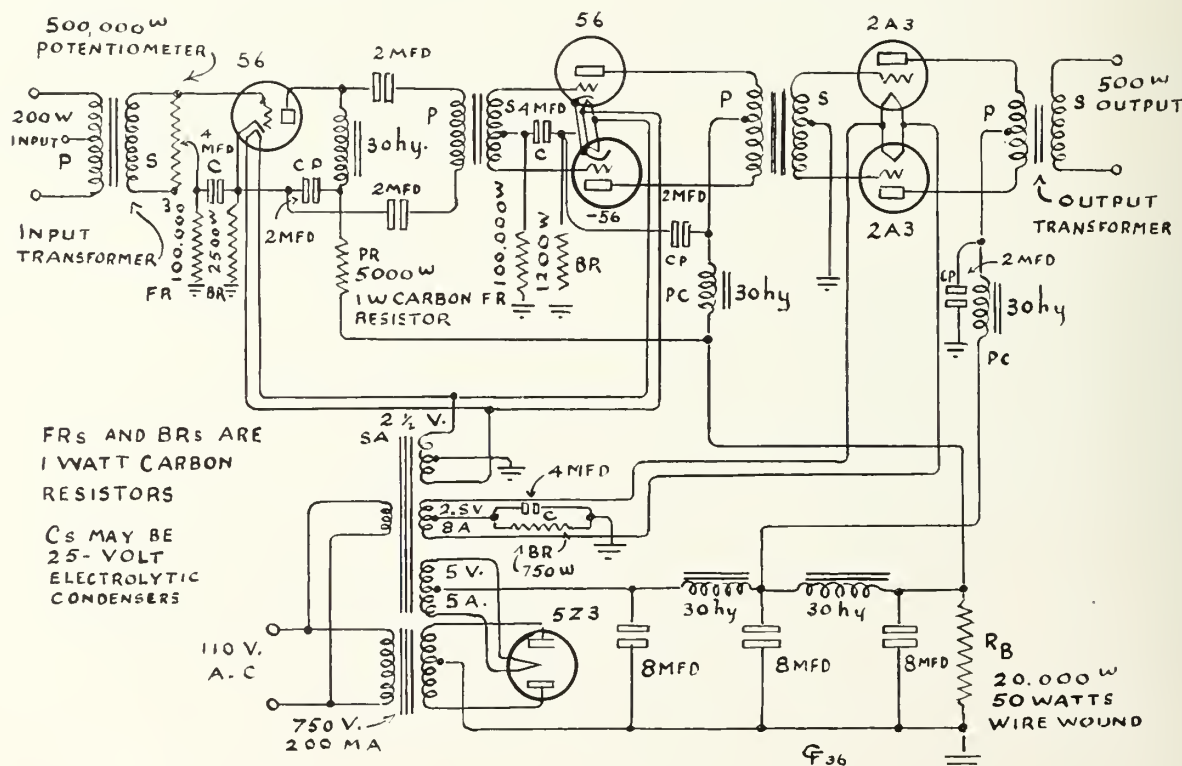


Fig. 1. Diagram of the improved version of the basic amplifier.

filter of this first stage—or even the grid filter of the second stage—were omitted, the amplifier would be inclined to break into a sustained oscillation due to feed back. This condition of oscillation occurs at a frequency within the audible range, so it produces a steady howling in the loud speaker connected to the output of the amplifier—the frequency of the howling sound being dependent on various circuit constants. This howling is sometimes called “motor-boating.”

Functioning of the Grid Filter

The feed-back of energy that produces this effect takes place in the following manner when grid filters are not employed. A voltage produced by a sound that disturbs the diaphragm of the microphone is fed through the input transformer to the grid circuit of the first amplifier tube. This voltage is amplified by that tube and by the two succeeding tubes of the amplifier, appearing as a greatly increased voltage in the circuit of the third amplifier tube. This relatively high signal voltage is fed back through the action of common coupling (common impedance) in the power supply to the grid circuit of the first amplifier tube.

The first amplifier tube and the succeeding two tubes then function to amplify this fed-back signal voltage, producing this time a very large voltage change in the third amplifier stage. This greatly increased energy is fed back in turn to the grid circuit of the first tube—amplified again—and so on and on until the signal voltage builds up to a steady value, which is determined by the tubes employed and the circuit constants. Of course, all this action and reaction takes place during an interval of seconds or fractions of a second.

When a grid filter such as shown in Figure 2 is used in the first amplifier stage, the energy that is fed back through the power supply from the final amplifier tube (or even from the second amplifier tube) is prevented from reaching the grid of the first tube by the grid filter.

Since the energy that is fed back is represented by a flow of current in the order of a few milliamperes, or fractions of a milliampere, and since this fed-back current must flow through the grid-filter resistance **FR** to reach the grid of the first tube, the voltage drop through this high resistance is so great that no energy is left to effect the grid. In other words, all the power that is fed back through common coupling in the power supply is dissipated in the filtering resistor **FR** and does not reach the tube grid.

It is to be remembered in this connection that a voltage, or pressure, is necessary to produce a flow of current, just as pressure is necessary to force water to flow through a pipe. Voltage, or pressure, however, can exist without a current flow (as in the case of a pipe that is capped on one end and yet has water under pressure in it). The voltage drop that occurs in **FR** is equal to $E = I \times R$, or in this case, $E = I \times 100,000$, where **E** is the loss of voltage that occurs in the resistance, **I** is the current in amperes that the voltage is trying to force through the resistance, and **R** is the resistance in ohms of the resistor, **FR**.

Other Effects of Grid Filter

A voltage that is produced across the secondary of the input transformer by a sound picked up by the microphone is applied directly across the grid and cathode of the tube by way of the condenser **C** in Figure 2. This condenser should have a capacity

BY CHARLES FELSTEAD ASSOCIATE EDITOR



of at least two microfarads, and preferably more, so that it presents a path of very low impedance to currents of all frequencies within the audio-frequency range. In other words, it offers practically no opposition to the passage of alternating currents of audible frequencies, yet it acts as an open circuit to direct current.

The grid bias voltage produced across **BR** in a manner that will be described later is applied to the grid of the tube through the filter resistor **FR**. Since the tubes in this amplifier are intended to act as Class A amplifiers, the grid of the tube is never permitted to swing into the positive region of its $I_p - E_g$ characteristic curve, and so no grid current ever flows.

The bias voltage produced across **BR** and applied to the grid of the tube through **FR** is thus purely a voltage, or pressure; and since there is no current flowing in this circuit due to the grid bias voltage, no voltage drop (or $I \times R$ drop) occurs in the filter resistor **FR**. As in the case of the capped pipe mentioned previously, we have only pressure (voltage) here, and as there is no current flowing, no loss of voltage occurs in the resistor **FR**. $E = IR$; so if $I = 0$, then $R \times 0 = 0$, and **E**, the voltage drop, $= 0$.

A grid filter is used in the second stage of the amplifier, since, although this is not as low an electrical level point as the first stage, there is still the possibility of feed-back from the final stage of the amplifier. No harmful effect is likely to result, however, if this grid filter is not employed; in which case the cathode bias resistor **BR** is shunted by the grid by-pass condenser and the grid return of this second stage connected directly to the ground point without the 100,000-ohm resistor **FR**.

For the reason mentioned above, no grid filter is required in the final stage; there being no higher level point in the amplifier from which energy may be fed back to this grid circuit. The grid bias resistor (**BR**) for this stage and its by-pass condenser are incorporated with the power supply, as may be seen in Figure 1. This helps to simplify the amplifier.

Plate Filtering

It will be noted that parallel feed is used in the plate circuit of the first amplifier tube. This is done, as was explained in a previous chapter of this series, to avoid any possibility of magnetic saturation of the coupling transformer core by the flow of an excessive current through the transformer primary winding. In addition to this parallel feed circuit, a condenser marked **CP** and a resistor, **PR**, are incorporated

(Turn to Page 25)



Movies In Color: From An Idea To Technicolor

By HOWARD C. BROWN

THE beginning of color photography was probably Clerk Maxwell's classic experiment before the Royal Institute of London when, in 1861, he demonstrated that any shade of colored light could be produced by combining various amounts of the three primary colors: red, green and blue. A few years after Maxwell's demonstration, Ducos du Hauron published a pamphlet entitled "Solution of the Problem of Photography in Natural Colors" in which he described nearly all of the basic principles of color photography as we know them today, and laid the groundwork for practically all of the subsequent developments of color photography, including the principle of bi-pack and tri-pack.

As far back as 1866, then, it was known **what** must be done to get photographs in natural color. The seventy years since then have been devoted to finding out **how** to do it.

Since any shade of color can be produced by some combination of red, blue and green light, if we make three negatives of a scene, each filtered to record only one of the primary colors, we should from these negatives be able to reproduce a perfect color picture. Suppose we make three black-and-white positives from our three negatives: If you project them on a screen, each filtered by its proper primary-color filter, we should be putting the picture together exactly the way we took it apart in making the negatives, and a perfect color-reproduction should result. This is called the **ADDITIVE** system, for we start with a dark screen and build up our picture by **adding** primary-color components of white light until the desired color is obtained.

If, on the other hand, we make a single composite color-print from our three negatives, the various areas of print will **subtract** the unwanted color-components from the white projection light, and give us a perfect reproduction of the scene's colors on the screen. This, since it works by subtracting parts of white light until the desired color is reached, is called the **SUBTRACTIVE** method.

Ruling out the early experiments in coloring black-and-white pictures by hand or stencil (the first motion picture projected by a screen, exhibited in 1894 by C. Francis Jenkins, is said to have been hand-tinted by a Mrs. Boyce), the first important step in genuine natural-color cinematography was a three-color additive process developed in England by W. Friese-Greene. This process consisted in taking successive pictures through primary filters, on a single strip of negative. The filters were made part of a rotating wheel in front of the film. An ordinary positive was made from this negative, and the print was projected upon the screen in a similar

manner, through synchronized color-filters. But the excessive speed necessary in taking and projecting these pictures caused uncontrollable wear on both the machines and the film, so the process was soon discarded.

Gaumont, in France, tried to overcome this difficulty by developing a camera and projector both equipped with a special three-lens system. Each lens reproduced a frame approximately two-thirds the size of a normal 35mm. frame, and each lens carried its proper primary-color filter. Very promising results were obtained by this process, but the fact that special camera and projection equipment were necessary eliminated any commercial possibilities.

The only additive three-color process that has lived down through the years is the one invented by A. Keller-Dorian, based on the principle of inserting a line screen three-color filter in front of the lens of both camera and projector, and impressing a series of microscopic cylindrical lenses onto and across the celluloid side of panchromatic film. The 16mm. rights to this process were purchased about ten years ago by the Eastman Kodak Company, who marketed it successfully under the name "Kodacolor." Of late, Eastman and Paramount engineers have been grooming the process for a professional debut. It is said by those in the know that the 35mm. version of the process has been refined to give outstanding results.

The many difficulties inherent to three-color additive work prompted many inventors to try and perfect a two-color additive process. For perfect reproduction of colors, the three primaries are necessary; but a fair effect of color can be obtained by using only two colors—usually red-orange and blue, or red-orange and green. And while the results may not equal those of a three-color system, the greater simplicity of a two-color process offered definite economic advantages—especially when there existed no practical three-color system as a competitor.

The most important of these two-color additive systems was Kinemacolor, which enjoyed considerable favorable publicity, and some small com-

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mercial success about 25 years ago. This process used a special camera and projector, and worked at a speed of 32 frames per second. A rotating color-filter wheel made alternate frames through red and green filters, or projected them the same way. But an important defect in the Kinemacolor method was its inability to reproduce even moderate action scenes without color fringing. The color-image of any scene was composed of two frames—a red-filtered frame and a green-filtered frame—photographed successively; on the screen, that same "persistence of vision" which blends any series of projected frames into an illusion of continuous motion blended the two partial-color images into an illusion of a fully-colored picture. That is, after the red-filtered frame left the screen and the green-filtered one took its place, the eye retained a left-over impression of the red picture, which blended with the actual green image to reproduce the intermediate

cated, four-color additive process, but before it got anywhere, it shed two of its colors and became subtractive. For several years after this development, which came about 1921, Prizma flourished. D. W. Griffith's "Way Down East" had a long Prizma sequence, and many of the old Famous Players productions had Prizma sequences and inserts. In England, Commodore J. Stuart Blackton made two complete features in Prizma; one of them, "The Glorious Adventure," starring Lady Diana Manners and Victor McLaglen, was quite extensively shown in this country. It was actually the first commercial all-color feature, being released August 27, 1922.

On January 22, 1923, Technicolor's two-color subtractive process made its bow in Technicolor's production "The Toll of the Sea," which was accorded Honorable Mention in Robert E. Sherwood's listing of the Ten Best Pictures of 1922-23. It was photographed by Ray Rennahan, who is still one of Tech-



In the middle we see Ray Rennahan and one of the old two-color Technicolor cameras, flanked by right- and left-hand views of the three-color Technicolor camera which photographed "Trail of the Lonesome Pine."

shades. That idea works very well when there is no great amount of movement between one frame and the next; but where some fast-moving object has greatly changed its position between the frames, the carried-over image won't be in perfect register with the actual one, and on one side of the object, we will see a bit of red, without any admixture of the green, while the other side will show a fringe of green, unmodified by the red-component which should be there.

About this time, a firm of consulting engineers, Kalmus, Comstock & Wescott, became interested in the problem of color movies. Their first color research was along two-color additive lines, and an early American patent was issued to Dr. Daniel Frost Comstock for a method and system of producing a plurality of images, which successfully eliminated color fringes. These gentlemen soon set up a color film company, naming it, in honor of their Alma Mater, Massachusetts Tech, "Technicolor." It is not generally known, but Technicolor's first color picture, which was produced in Florida, made use of the additive theory of color-photography.

Although this process obtained very pleasing results, and had eliminated most of the two-color additive defects, it got nowhere commercially because of its requirement of special projection equipment. So instead of dominating the motion picture industry with its process, Technicolor discovered that it must start afresh and try to develop a commercial subtractive process.

While the Technicolorists wrestled with this problem, the Prizma process (later Kelly-color) enjoyed a brief vogue. Prizma began life as a rather compli-

nocolor's ace lensers after fourteen years of unbroken Technicoloring.

This version of the process involved the use of a special camera, and a great deal of intricate work in the laboratory; but the prints could be run on any projector. The two-color separation images were made on adjacent frames, through a single lens, at one exposure. A rather delicate beam-splitting prism divided the lens' image into two. One of these was reflected upwards, and then around to the film; the other, down and around in similar fashion, so that the image-forming light travelled in each case the same distance. The camera operated at twice normal speed, pulling down two frames at a time, instead of one; but counting the two frames of the pair exposed as a single exposure, the exposure-frequency was normal, though twice as much footage passed through the aperture.

Printing was done on an improved Duplex printer known as the Carleton Printer. The two separation images were printed on two separate strips of a special, thin stock. After printing, developing and dyeing, the two films were cemented together, back-to-back, in register, to form a single two-color print.

Technicolor also used another printer, perfected by their own engineers, and known as the "K" printer. This printer was very slow in speed and was used only for the printing of badly over-or under-exposed scenes, out-of-register negatives, and similar precision salvage-jobs.

About eight years ago, the firm evolved their present printing method, which is known as Imbibition Printing—familarly, "Ib" printing. This is a sys-

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DEAN, New York Institute
of Photography.

Hold the Camera Steady

By KARL A. BARLEBEN, JR., F.R.P.S.

IN the old days fuzzy and blurry photographs were quite unusual because a tripod was then an indispensable part of the camera. Snapshot exposures were the exception rather than the rule, and to make a picture, the photographer had to take his time and set up a tripod, focus on a ground glass, insert the plate holder, pull out the slide, and then finally make the exposure. Even so-called snapshot shutter speeds were used with the camera on a tripod. What a difference today! The tripod is now regarded as an obsolete relic of the years gone by. Only view camera users seem to use it; everyone else preferring to hold the camera in the hands. This is a natural result of the popularity of the "hand camera" which did away with ground glass focusing and physical bulk. Fast lenses and speedy emulsions have made it possible to photograph at rapid shutter speeds in very unfavorable illumination. The tripod, then, was eased out until now it is used only for very extreme cases such as time exposures and the like by the vast majority of amateurs. Miniature camera owners seem to ignore the tripod completely, for only now and then will you find an owner confessing to the ownership of a tripod—and then it is a flimsy affair which gives more trouble than anything else. Yet, because of our dislike for the tripod, and our unwillingness to be burdened with it, we often secure pictures which do not quite please or satisfy us.

Blur, fuzziness, and general out-of-focus effects grace many of the present-day snapshots, and the amateur often believes that his lens is a poor one, or that something is wrong with it. Or he figures that perhaps the film is not lying perfectly flat in the film channel, thus causing a slight blur in his pictures. Never would it occur to him that he may be at fault. Of course there may be a possibility of the lens being defective, and it may happen that the film does not lie perfectly flat in the film channel, but on closer examination you will most likely find that none of these is responsible.

In our hurry-up civilization, in which we cannot take time ever to make a photograph properly, we often ruin what might have been a perfect picture. The actual count cannot be even guessed, but I am sure that every single camera owner at some time or another has experienced fuzzy pictures which owe their failure as photographs to our inability to hold the camera steadily during the interval of exposure. Invariably we jerk the shutter release suddenly, thus moving the camera slightly at just the moment when it should be at its steadiest! First, it becomes necessary to learn how to hold the camera securely in the hands—something few instruction books mention. Cameras of all sizes and shapes and designs are naturally different and re-

quire different handling, yet the basic principle of holding them steadily remains the same. Both hands should be used, and the camera should be cradled in them comfortably, yet firmly. No effort is required to do this properly, for force is unnecessary.

At eye-level, the camera is best braced against the nose or forehead, depending upon the style and type of camera. At waist-level, the chest makes an ideal brace for the back of the camera. In each case, both hands hold the camera at convenient ends with the shutter release adjacent and convenient to the thumb or forefinger, whichever is most convenient. There should be no need to shift or move a hand or the camera to reach the release. As an aid to steadiness, and to foster our laziness in the matter of tripods, some manufacturers have devised special tripod substitutes. One such device consists of a walking stick which can be used to support the camera. Another consists of a metal chain, upon one end of which the camerist steps, while the other end is fastened to the tripod socket of the camera. By holding the camera up and thus tightening the chain, added steadiness is achieved. Still another device consists of a belt into which fits a short staff, upon which the camera is mounted. This makes the cameraman look like the color bearer in a parade, but it does serve the purpose of aiding in holding the camera steady. All of these devices are intended to replace the regular tripod, which, in the final analysis, is the best camera support as yet discovered—yet few will use it.

However, now that we have some idea on the matter of holding the camera steady when handheld, let us go a bit further. Assuming that we can hold the camera steadily in the hands, we can still shake it at the critical moment by using the shutter release lever or button as we would an electric light switch which requires force to operate it. It seems that everyone has a decided tendency to press or push on the release as though it were some thing gigantic. Not only that, but the movement on it is quick, sudden, and jerky. This quick action certainly throws the camera somewhat off its original position, and the worst part of it is that the camera moves at precisely the moment it should be at its steadiest—the moment of actual exposure. Result: Blur due to movement of the camera.

If every camera owner were a marksman, this evil would not exist because the marksman has trained himself to squeeze the trigger of the rifle, and never to jerk or pull it suddenly. To snap the trigger back suddenly would destroy his aim completely. He presses or squeezes the trigger slowly and deliberately until the hammer hits the cartridge. There is no haste, no sudden movement. As a result, if the rifle is aimed at the bulls-eye, the bullet reaches it because nothing has disturbed the careful

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aim of the rifle during the pulling of the trigger. The camera owner can learn a lot from the marksman, for the same technique he uses with his trigger can be applied to the shutter release of a camera. Aside from holding the camera steadily in the hands, the release should be depressed in a slow deliberate manner, so that the shutter is caused to operate at its own good time and without causing the camera to move during the exposure. Try this some time and see if the results are a lot better.

As a general thing, a heavy camera is better for hand use than a light one because the very weight of it tends to maintain its original position when the shutter is released, however, light and small cameras can be kept perfectly steady by simply applying the few fundamental principles previously outlined.

The speed of the shutter is another factor to reckon with. It follows that the faster the shutter speed, the less danger of blurred pictures due to movement or shake of the camera. For this reason, many cameraists never use a speed of more than 1/25th of a second when using the camera hand-held. Indeed, some few cannot even hold the camera steady at this speed and have to step the speed up to 1/50th of a second as their lowest limit. Just as everyone finds his own method of holding any camera, so each one differs as to the shutter speed he can use. Some can hold a camera steady in the hands for a full one second exposure, while others, as mentioned, must use at least a 1/50th speed. Everyone must learn his limits. A safe average rule is to use a 1/25th of a second or faster shutter speed when holding the camera in the hands. Slower speed should be used only with the aid of a tripod or similar firm support for the camera. By observing this suggestion, no danger of blurred results need be felt.

Illustrating a good way to hold a standard folding camera in the hands. Note that the back of the camera is resting against the nose and that the cable release is conveniently held in one hand which also holds the camera — Photo by Josephene Barleben.



So far we have been discussing cameras fitted with normal focus lenses. What about telephoto lenses? It is obvious that a long focus lens will magnify any vibration or movement of the camera just so much more than the normal focus lens. Therefore, a greater shutter speed must be used if the complete elimination of movement be expected. When a 1/25th of a second speed may stop vibration with a normal lens, a 1/50th, 1/75th, or 1/100th of a second speed should be used under the same conditions with a telephoto lens. By far the wisest plan is to always use a tripod when long focus lenses are used, for it is surprising how such lenses will amplify the slightest movement of the camera, and record it, naturally, upon the film.

By holding the camera steady and using common sense, or better still, by using a tripod, you can forget about camera movement.



When using telephoto lenses, extra care must be exercised. Here one hand is used to support the lens on a miniature camera for steadiness—Photo by Karl A. Barleben, Jr.

The best way to hold a miniature camera in the vertical position. Here the left forefinger lies against the bottom of the camera to give steadiness. The back of the camera is pressed against the forehead. The right forefinger is at the shutter release—Photo by Morris Germain.

An easy way to hold a miniature camera in the horizontal position. Note how the hands cradle the camera securely yet comfortably, and the forefinger is on the shutter release without the hand moving—Photo by Morris Germain.

In Defense of Prepared Developers

By KARL A. BARLEBEN, JR., F.R.P.S.

TODAY there is a vast array of prepared developers available. In fact one wonders if amateurs make up their own solutions any longer. The puzzling thing is why they should want to. It can be easily understood why the professional photographer ignores the prepared products and sticks to mixing his own chemicals—

he has all the facilities and time, and of course by mixing his own he can vary the amounts at will to produce certain definite results which he may want now and then. With the amateur, the case is a little different.

Let us look into the matter a bit more carefully. The average amateur produces pictures for the

pleasure involved. He is not likely to find any particular joy in mixing his own chemicals, for the process is, after the novelty has worn off, rather dull and uninteresting, to say nothing of monotonous. And as usually is the case, the stock solution bottles are empty of the precious fluid just when one wants to develop up some particularly interesting or important negatives, and time is at a premium. It would appear that good sense dictate the use of the prepared products rather than get into difficulties of his sort. The professional has his dark or work-room wherein he can mix chemicals to his heart's content. He saves money by so doing. But the amateur? When it is considered that the few cents saved by mixing chemicals is quickly overcome by the time lost, to say nothing of the bother involved, the prepared products certainly are not overly expensive.

As many amateur photographers are city dwellers and live in cramped quarters, any additional space required or effort expended seems to be amplified. If the bathroom or kitchen is chosen for mixing chemicals, there will be "the little lady" to contend with. While the element of danger is negligible, it might also be considered. Some chemicals do not improve the flavor of the dinner, nor make the toothbrush work any better. A certain amount of chemical dust can be expected to be carried through the air and into food, cooking utensils, and toilet preparations. Paraphenylene-diamine, in the most common form, readily powders and dusts itself into thin air when poured, shaken, or agitated. Fortunately few, if any, amateurs use the chemical these days in this form.

But enough. My principal purpose here is to indicate the wisdom of using prepared developers and not to knock the idea of mixing chemicals. My thought is that those who have the time and facilities should, and those who haven't, shouldn't. Unquestionably the era of the miniature camera is responsible for the increased use of prepared developers. Years ago, you were a sissy if you used them. Even today some few amateurs consider it "professional" to mix their own chemicals, and for no other reason clutter up their homes and spend precious time at it.

A few of the excellent reasons for using the prepared products are as follows:

- (a) You are assured of uniform strength.
- (b) Purity of ingredients.
- (c) Consistency.
- (d) Avoidance of fuss and bother.
- (e) Cleanliness.
- (f) Freedom from staining, chemical infusion, etc.

Years ago the photographer carried a little notebook in his pocket in which he kept treasured and "secret" formulas. If he liked you he might let you copy one of his pet formulas as a great favor. Today there is no such secrecy. All formulas are yours for the asking. In case the formula of a prepared product is not made public, who cares? As long as it does the work, and it is made available, why should anyone worry about what chemicals it contains? Practically all of the prepared products are unknown chemically to the public, yet they do their work in a most satisfactory manner. So most amateurs let it go at that.

The beauty of prepared developers lies in the fact that they can be obtained in several forms. There are many in powder form, supplied in glass tubes or containers. Then there are the clever "aspirin tablet" kind offered by Burroughs Wellcome.

And last but not least is the liquid type, usually sold in concentrated form, but in some cases "straight," to be used "as is." The most convenient is the liquid type, for all that is needed is to pour the contents of the bottle in a tray or tank and get down to developing the films or plates, as the case may be. I like the liquid type because it particularly avoids any possibility of the chemical content of the water supply affecting the solution. Most liquid developers are made with distilled water, hence their action can be accounted for every time. When you dissolve a powder in tap water, the results may or may not be completely satisfactory, particularly when traveling about.

And speaking of traveling. It is quite out of the question to mix your own chemicals when away from home unless you want to make a truck-horse of yourself. Travelers always depend upon prepared developers, even if they are not so inclined. There just isn't anything else they can do about it. Even with the prepared products, things can be tough enough for the traveler. Try developing your films or plates on a train, ship, or in a hotel, and see what you have to go through! For home use it is the same. How convenient to merely empty a bottle into the tray or tank whenever the urge to develop strikes you. No mess to clean up, and no time lost. You need never battle with the good wife if you use prepared developers.

In this modern age we not only have prepared developers, but also acid hypo solutions in concentrated form. And paper developers. And special hardening solutions. The connection between chemistry and photography is becoming more and more strained. Well, why not? The actual contact with chemicals does not, except in very rare cases, produce better pictures. With the prepared solutions you have a fixed, definite strength of known purity, always at hand. The mystery and element of chance have been eliminated. You make the picture in the camera and trust to several bottled solutions. The chances are that by so doing you can do better than trying new formulas and mixtures of your own mixing. In short, the mechanics of photography have been removed and placed in safe hands. This leaves you more time to produce good pictures. If, as is often claimed, photography entertains certain variations, why not stabilize it and assure the photographer of consistent results? It is the final result which counts—the negative, the print, and not the camera, the formula for developing, or the type and grade of paper. It is the picture that people see and enjoy. Their interest in its birth and travel to maturity on the finished, mounted print is practically nil. This being so, why not standardize a variable process as far as possible and thus gain in the end by producing better and more consistent pictures?

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Color—The Spirit of the New Age

By MARY KING HUNTER

(By Special Permission of the Authoress)



COLOR, in its appeal to the mind of the average person, affects both nerve and emotional centers. No matter how unconscious we may be of this, all of us vibrate to color, more or less, and feel it in our super-sensitiveness.

The primary or elemental colors produce an instantaneous response and when once the effect or sensation which they produce on the mind is known, then their uniformity can always be depended upon in producing a like result.

We use the bright, primal colors for advertising purposes, desiring as we do an instant re-action thereto and realizing that the elementary colors are fixed in their wave length and re-action. Advertising is to business today exactly what steam is to machinery, the great propelling power. It would therefore seem that when we use color, a knowledge of color-vibration would be not only helpful but actually necessary. All complimentary colors work much more slowly, their action being reduced by the addition to the color—of the neutral white.

Complimentary or neutral colors, such as black, white, grey or beige, are less disturbing than the brighter colors, but at the same time have their uses in acting as a buffer to the reds, blues, greens and yellows which we group upon or around them.

Color is either a **smile** or a **frown**. First we learn how to use it and every smile tends to make the nerve centers, and other of the body chemicals, sense a feeling of happiness, well-being, or harmony and health. Evil, too, has its own distinct vibration which can be shown in color aura. Badly chosen color in dress or for home decoration not only reflects a poor taste in color, an uneducated color-sense, but definitely reflects character. Merely negative people do not throw off a strong color vibration. They are mostly weak, yet, often "stubborn in the wrong," easily influenced and changeable as the winds that blow, hither and thither, "Where no man listeth."

Untutored people prefer the so-called "loud" colors. Loud noises are their manner of expressing great joy, loud music too, not always inharmonious, but noticeable for the abuse of the loud pedal. "King for a day," the modern version of "Place a beggar on horseback and watch him ride to the devil,"—two ways of remarking on the loud, self-assertion and latent self-complacency so purely a sign of the untutored mind.

Real taste and discriminating conduct along almost any line is either ours from hereditary instinct or the hourly, daily use of fine clean thought, fine feelings and harmonious surroundings. Aristocracy of character, quietly and without a flare of trumpets, proclaiming itself in well-chosen, actions and language.

Narrow-minded people are often the subtle-minded amongst us. They are not imaginative and have little or no enthusiasm, being often suspicious and distrustful without due cause. Their color is always amber, shading to yellowish green.

Broad-minded, humane people sub-consciously

see color everywhere—in fact without always recognizing their own particular color vibration. The reason for this is the multiplicity of colors to which they may be said to vibrate. The rolling prairie intrigues them with its scintillating gray-green haze. The ever-changing sea with the restless white breakers capping the billows of greenish blue, the eternal hills with their variegated hues of greens, golds and purples. How small we feel, we, the dreamers, the thinkers, the creatures of vivid imagination, the enthusiasts whose color aura is as vivid as the Rainbow! And—how great the Works of God. Only the "seeing eye" (the introspective character) feels color in its deepest and most sacred message to the human mind. This character sees all, hears all and bows low before the majesty of Nature.

The superficially clever person, especially in woman-kind, will display her desires and complexes by the use in dress of a vivid gaudy scarlet. "The Scarlet Letter"—"The Scarlet Woman"—"As Scarlet Their Sins," etc., denote the conjunction of this color with a misuse of sex. Over-sexed children, particularly young girls, adore scarlet and it is often foolish sex impulses or complexes that drive certain types of older women (women of light, mercurial mentality) to the use and abuse of this flaunting color.

Palest pink, fresh as a daisy,—who amongst us but would see it as the color of Innocence, blush roses, sweet baby toes and sugar candies?

Even the dignified and often sad purple has within it a strain of wickedness. Bacchante's grapes were purple and the purple orchid proclaims an exotic, experienced, expensive taste on the part of

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the wearer. Yet, violets are the outward manifestation of "kind thoughts" and in many cases equally kind deeds. The deep red of the purple has been lightened—the sadness of experience gained—all is lightened and softened by the introduction of the neutral white.

Thus we know the character of our friends by their vibrations in shape, sound, color and even odor. Their state of mind is clearly expressed in the colors to which they are at the moment vibrating. Work with nature, and anything progressive is possible. Nature is always seeking direct expression.

The nervous system reflects its own disturbances, causing pain or pleasure, as the accompanying emotion.

Super-sensitiveness reveals a co-ordination of color vibrations to moral impulses, or in other words, the effect of color is clearly shown on the morals of man. The artistic temperament is best balanced by the colors which appeal to the religious temperament and vice versa, as the scientific and musical temper-

ament would find its balance or neutrality in the artistic and religious. The substance of all good thought is essentially creative and intentions always determine the intensity of a thought-vibration.

Both COLOR and MUSIC arouse and stimulate the memory and as all things in the thought-world seek to become things in the physical—color-thoughts seek expression in Harmony. Sir Isaac Newton has assured us that the length of the spaces occupied by the seven primary colors correspond in chord length to the seven notes of the diatonic scale. Many people uneducated in a color-sense will seek to visualize Harmony by employing only one color tone, although that may well be in its various shades. We now realize that this expresses only continuity and that Harmony requires various notes of color, as music skillfully blended together to produce a pleasing and harmonious result. Yes, and often a discord of the correct vibration in relieving monotony creates a wonderful melody or a pleasing and curative color scheme.

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old or new Imbibition processes, nor with his Mosaic process—it is a fully subtractive process.

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Mr. Fuster is well known among the pioneer color men from Boston to Hollywood and he has been a citizen of Los Angeles for twenty-five years.



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THE VIEW FINDER

The Correct and Proper Way of Utilizing It

By AVENIR LE HEART

EVERY photographic camera is equipped with a device known as a view-finder. This little addition to the camera was to help the photographer to absorb the view as he might be attracted by it in his routine of photography. For his convenience this view finder brings the view to very pleasing small dimensions which prove most attractive.

This little appliance, which seems most friendly in its nature, is, in fact, a most powerful enemy to the one who would rely upon it and its working qualities.

The object of this article is to expose this presumably friendly little attachment and to suggest the correct and proper way of utilizing it.

There are two popular types of view finder: One reflects through the lens of the camera and the other through a lens of its own. One of these types absorb the view on a diagonally placed mirror, which in turn projects it to its adapted lens. Now, in the process of projection, the matter of composition, due to the law of the lens, crosses its lines and the appearance of the projected composition is reversed in its placements. What is present in composition on the right side appears through projection on the left side and vice versa.

This factor of reversal is the inner secret of the failure of many pictorial possibilities.

The law of balance, as it is applied in the conception of proper composition, requires that the heavier weight be on the right hand as we view it. Accordingly we locate studies consciously or unconsciously, having this law in mind.

If the photograph is made without consulting the view-finder, we are apt to be successful in registering correct composition. But suppose we locate the view by seeing it through the view finder, then we have the choice of two things; either to reject a good and correct composition by seeing it in its reverse form, or look for another composition that would appear in the view-finder's projection as pleasing and find it wrong in the finished print.

In talking to an average camera artist, this subject of deceit, on the part of the view-finder, has never seemed important, because the average "snap shooter" seemed perfectly satisfied with registering the desired view or the familiar person.

The photographer whose ambition is to portray studies of quality should be conscious of the deceptive nature of this view-finder. In the estimation of the author, the view-finder should be consulted only as a matter of sharpness or delineation of the study itself. The composition should not be located by the help of the camera's mechanical view-finder, but

spotted as one actually sees it, or with the help of a little device that one can prepare for his own use, i.e. take a square piece of cardboard of let's say 5 x 7" and make a small opening of about one-quarter to one-half inch in the center of it. By locating the composition through this opening one has the advantage of seeing the composition unalterably as it is and, at the same time, by moving the cardboard nearer or further from the eye, one will see the linear limitations of the object or the imaginary bordering lines of the composition. Having located the desired composition it is an easy matter to adjust the camera with the help of the demoted view-finder and obtain a good picture.

There is a slight drawback to this cardboard finder, as one does not see through it on the same level as one would see through the view-finder. Therefore, one must be conscious of this fact and bring his eye level with the level of the camera in viewing a scene or an object.

There is still another kind of view-finder; the ground glass commonly found in portrait cameras, on which the image appears in upside down position.

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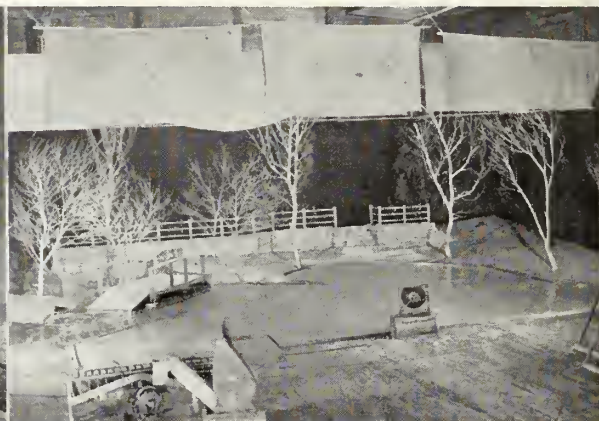


THE STORMING OF HOLLYWOOD

By R. VAN SLYKER

ON March 20th the report of the Weather Bureau of Los Angeles was 75 degrees, one of our annual unusually warm days. On the stage, with the heat being generated by some forty studio lights, Mae Clarke and James

After all this work we have the answer expressed in terms of tons of refrigeration per hour. This should give an indication of the amount of heat generated by the lamps. When it is also considered that a ton of ice has heat absorbing value of 288,000 B.T.U.'s



Machine manufacturing snow from 300 pound blocks of ice.

Dunn, literally bundled up to their eyebrows in ice skating costumes of the 1860's, skated across the pond of real ice on the cold frozen set, using real snow for Republic's "Hearts in Bondage." Trees were bowed down by the weight of snow on their branches with the temperature a few degrees above freezing. In this manner the world's first scene was shot in an (Ice Box) Refrigerated Stage.

The conversion of the refrigerated building, some 140 feet long by 90 feet wide and 42 feet high, into a sound stage acceptable to the demands of the camera and sound departments of the various studios, created quite a problem in acoustical treatments. In a bare building the usual normal acceptable noise level of minus 30 DB was easily met with as the insulated walls of this stage were already 14 inches thick, filled with a heat resistant material which also acted as a nearly perfect sound absorbent. Unfortunately, the interior finish of the building was of hard pine, carefully varnished, giving a bright glossy damp-proof finish to the wall and a bright glossy reverberatory effect to the slightest noise. This was overcome by the liberal use of ozite hung on the walls and distributed in sections along the ceiling a few feet below the main refrigerating coil.

An idea as to the amount of the heat load given by the lamps can be seen by these figures—1 watt of electricity contains a heat energy content of 3.42 British Thermal Units; 1,000 wats generate heat energy to the extent of 56.9 B.T.U.'s per minute. This amount multiplied by the number of minutes in an hour gives a total B.T.U. heat content for 1 kilowatt of electricity of 3,420 B.T.U.'s per hour. Multiply this figure by the total load expressed in kilowatts, or as in one case, that of Republic's "Glory Parade"—some 2,000 amperes were used. Multiplying this 2,000 amperes by the lamp voltage of approximately 100 volts to get the watt, then divide this by 1,000 to get the load in kilowatts, finally multiplying by 3,420 B.T.U.'s and divide the product by 12,000 which will determine the rate of evaporation of ice expressed in B.T.U.'s per hour.

Motion picture set ready for its baptism of fresh snow.

for 24 hours by melting, we can easily realize the enormous amount of refrigeration per hour required to absorb the heat loads of the lamps.

Moving persons give off a heat load per individual of some 500 B.T.U.'s per hour. A crew and

(Turn to Page 29)

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Adventurers to Seek Sheba's Treasures

By FRED HAAG

[Mr. Haag is a well known writer whose home is in Hollywood. He is a man of considerable background and may be depended upon to bring back something unusual. Let us hope he may be the new discoverer of Sheba and her capital.—EDITOR'S NOTE.]



HE fabled treasures, of the Queen of Sheba, may at last be brought to civilization if our exploration work in Northern Arabia meets with success this summer.

We are starting on a search for the lost city of Saba, better known as the city once ruled by the Queen of Sheba.

The Queen of Sheba, as we all know, was the girl friend of King Solomon and she is said to have laid vast treasures of gold, spices and precious stones at his feet, in quantities never before heard of.

The most glowing accounts of the Queen of Sheba are recorded in the Bible. Here we find that she visited Solomon in the year 950 B. C. and brought her treasures by camel train from the capital of Saba. In one load there were 120 talents of gold, which in good old American cash is \$1,700,000 or better.

Two French flyers are credited to have flown over, and to have photographed this city, but they were unable to land because of the rough terrain. They stated that the natives took great pleasure in taking pot shots at them just by way of amusement.

Saba at one time is supposed to have been the capital of Arabia and one of the greatest trade centers in the world. Great overland caravans of camels carried ivory, gold, spices, textiles, etc., as well

as gems to all parts of the world at that time. Its trade became so great that trade branches were established in other parts of Arabia as well as in Ethiopia, but after the sea routes were established they closed the overland routes and Saba fast fell to ruins.

During the second, fourth and sixth centuries this land was ruled by Ethiopia and the Romans are said to have made several unsuccessful attempts to capture it at that time.

We plan on flying from London to our base which we will choose when we arrive in the country itself. From there we will use the air or any type of transportation that can be used to the best advantage. There is no doubt that we will collect a good deal of material for screen as well as fiction writing and bring back many fine shots.

This trip will not be a grand and comfortable vacation, but it should prove very interesting and may net some unexpected thrills, as there is less known about this territory than any part of the world, except the polar regions.

While in Europe I will visit the Olympic Games and write a few articles.

Here's hoping I meet many of the Hollywood boys in London, Paris or Berlin.

AN ENVIABLE RECORD

Mr. Edward Alenius, A.R.P.S., President of the Telephone Camera Club of Manhattan, N. Y., enjoys a unique distinction. He has had more prints accepted and hung in salons all over the world during 1935 than any one individual, according to "Pictorial Who's Who."

In a talk he recently gave at the New York Institute of Photography for the benefit of the students, Mr. Alenius explained the inside story of his unusual success with pictorial and salon photography. Most interesting was his description of the methods he employs in preparing his prints, using Fresson, Carbro and Bromoil as mediums to suit the different types of pictures.

Some 200 students of the New York Institute gathered to listen to Mr. Alenius. And they came away wondering how a man with so little spare time could accomplish so much in photography. For Mr. Alenius is a business man, associated with the Telephone Company, and his photographic activities must be confined to evenings and week ends. Yet in spite of this he is number one man in American Photography in respect to the number of his prints that have hung in salons during 1935.

People interested in photography can learn a lot from such authorities as Mr. Alenius, and it is a tribute to the New York Institute that they bring such men to their studios to address their students. Each month an outstanding authority in some branch of photography conducts a special lecture for the benefit of N. Y. I. students.

A fully illustrated catalog describing the various courses of instruction in portrait, commercial and motion picture photography may be secured free of charge by writing to the New York Institute of Photography, 10 West 33rd Street, New York City.

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HAMILTON RIDDEL, EDITOR



BIRD CINEMATOGRAPHY

By O. J. GROMME

(EDITOR'S NOTE: Mr. O. J. Gromme, chief ornithologist of the Milwaukee Public Museum, has for many years been successful in obtaining unusual pictures of bird-life. His account of Bird Cinematography is authoritative, and will prove especially interesting to those movie makers who desire to record an unusual subject for their home films.)

FILMING birds in their natural environment calls for some strategy and a great deal, a very great deal, of patience. Most people have the idea that picture work we do is always one thrill after another. Nature filming, of course, isn't that. Yet it is exciting in another way; exciting because one is never quite sure what will be the filmer's lot. With the outcome never a sure thing, there's an element of uncertainty which makes photographing bird-life with a modern picture camera a most interesting venture.

While, for obvious reasons, our camera equipment is standard 35 mm.—Akeley and Eyemo—movie amateurs now have such a variety of sub-standard equipment to choose from that bird-life filming becomes far less arduous. I have in mind the motor-driven amateur size camera, with its utter simplicity of operation.

Bird cinematography we have already mentioned as requiring some strategy; namely, a camera-blind. This is a square tent-like affair, usually made of burlap. The burlap is camouflaged so that its outside appearance will be as near to natural surroundings as possible. Completed, my usual camera-blind measures approximately 4x4 feet. This kind of blind is not necessarily the only type, but in my work I use the foregoing.

Positioning of the camera-blind is of paramount importance. You will set up a blind, say, a hundred yards away from a nest. Gradually it is moved closer and closer, a few yards or a few feet at a time, to the nest. This is not always necessary, depending upon the shyness of the birds. Incidentally, it is worth mention that once having attained a final position, one must be on the lookout for cows. Cows may be dumb animals, but I don't think there's any more curious. I've had many a good camera-blind wrecked by their innate curiosity. If your blind is located anywhere near grazing pastures, I heartily recommend erecting a barbed-wire fence around it. One of the newest developments, which assure positive protection, is the electric fence. Very efficient and consisting of a single charged wire the electric fence, when our friends—the cows—let curiosity get the best of them, will let them get an electric spark!

While one is attaining a photographing position, through the side flap in the camera-blind it is ad-

visable to hang out what we shall call a "decoy lens." This "lens" may consist merely of an old baking powder can, tied to a string. Its purpose is to accustom birds to its movement, so that when one is ready for camera work and having substituted the camera lens for the tin can, the birds will not shy away. Birds, as a general rule, do not especially mind noises, but **any movement** which they perceive is fatal until they become accustomed over a period of time.

After the camera-blind is satisfactorily positioned, then is when the matter of patience comes in. The cameraman will take his position inside the blind, with camera loaded, and will wait for the action he desires to record. Sometimes it may start soon; again, in most cases, it will be only after hours of patient waiting.

The best time for photographing birds is when the eggs in the nest are near hatching, or when the young have emerged. It is at this time that one will get interesting movies, plenty of action and close-up studies, as the parent birds stay near the nest.

As there is no telling where you'll finally position your camera-blind, from the standpoint of an ideal camera set-up, it is well to be prepared for movie making in deep shadows. Even though you achieve an ideal set-up, one is still confronted with the possible necessity of making a shot when the sunlight is about gone. Hence, I always take along, on my field trips, a fair-sized mirror. With its help, light rays may be gathered and reflected into a poorly lighted camera angle. The accompanying illustration of the Ruby-Throated Hummingbird was obtained by this means of lighting.

One should be well versed in the art of proper exposure. You will encounter all kinds and degrees of lighting. Hence, a reliable exposure meter will considerably reduce the chance of inadequate exposure. Also, be sure that every bit of the business of handling the camera is perfectly familiar to you. You should be able to load, focus, and shoot with a minimum of fuss and movement. Fast Panchromatic film is essential for best results.

As a rule, I personally prefer to get as near to my subject as possible in order to use the regular two-inch lens. This requires extra patience and trouble, but is worth it. Telephoto lenses while making a set-up easier do, with a hand-cranked camera, cause side-sway which, in the case of a 12-inch lens, is quite noticeable on the screen. There are many times, however, as in the case of a camera-blind positioned in a tree (see illustration) where tele-



The tamest, or American Woodcock, upper left; a tree camera blind, upper center; the Goshawk, upper right; the Dickcissel, lower right; a typical camera blind, lower center; close up of Ruby Throated Hummingbird, lower left.—Stills by courtesy of Milwaukee Museum.

photos are indispensable.

The most photographed bird, the Tamest, or American Woodcock, relies upon its protective coloration for concealment. Nature's camouflage is most effective, as the photo of the Tamest will testify. One needs to look closely to discern the Tamest in the nest.

It has been my experience that the most difficult birds to photograph are the Sandhill Crane and Dickcissel. Both are particularly wary, and the cameraman's patience will be tried to the utmost in positioning a camera-blind which will fool them.

The Goshawk is another North American bird that once turned "Indian" on me, one day as I was making movies of it. Normally weighing about three

pounds, the Goshawk took exception to the stranger in his midst. With all the finesse of a seasoned aviator, he flew to an altitude of about 200 feet and then went in a "power" dive . . . at me! His aim was good, for his talons got part of my scalp, and tore it loose. Ever since this experience, whenever I'm photographing Goshawks, I always wear an aviator's helmet! Goshawks haven't particularly good temperament, as the reader will note from the accompanying photograph and belligerent attitude of the Goshawk.

Bird cinematography may be more trouble than average movie making activity. But for those who seek the unusual in motion pictures, there's nothing as fascinating.

RIGHT OFF THE REEL

By F. HAMILTON RIDDEL

In It Yourself: Although all amateur cameras have a "lock" position on the exposure lever, it is seldom that this feature is used. There are many times when the cameraman would like to get in the picture, too. Simply set up the camera—on tripod or other stationary support—press the exposure lever to "lock" position, and make your entrance into the scene. To avoid appearance of the scene having been made in this way, it is preferable in editing to delete the cameraman's entrance and exit from the shot.

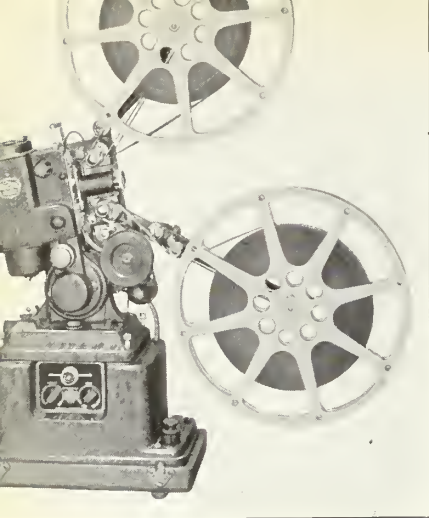
Camera Oiling: The music goes 'round and 'round—and so does the mechanism in any movie camera. Shutter, sprockets, and film claw all make hundreds of revolutions every time you expose a roll of film. Such moving mechanism needs occasional attention—oiling. Don't squirt oil all over bearings; just a drop is sufficient. And be sure to wipe away any

excess oil, for oil and film don't mix!

Bent Camera Reels: Constructed to withstand ordinary usage, solid flange camera reels through careless handling can nevertheless become bent. Such reels are "film snaggers," and cause a lot of camera trouble. Make a habit of inspecting all camera reels before using them. Both flanges must be straight and parallel to each other so film will pass between the flanges freely.

Close-up Movement: Take a tip from the professional screen and note the deliberate movement, of action, in the big close-ups. A hand reaching for keys in a pocket, for example, when being photographed must move more slowly than in actuality. Yet on the screen, the close-up action will appear perfectly life-like; and technically, you will have overcome blurred results.

Make Them Want More: When presenting a



Amprosound
Projector,
Junior
Model

CINEMA-TIDINGS

Amateur Motion Picture News

New Series Amprosounds. Answering increasing demand for inexpensive 16mm sound projectors, the Ampro Corporation of Chicago has announced a new series of Amprosounds. Announcement states the Junior Model Amprosound is designed for audiences up to 500 persons. Total weight of projector and speaker is only 53 pounds.

The improved sound head, a completely self-contained unit, is easily removable by withdrawal of four screws which detaches the unit from the projector. Exciter lamp—prefocused, obviating adjustments—and photocell are readily accessible for instantaneous replacements. Sound drum and filter are mounted on ball bearings. The drum is the rotary type to avoid sliding action between drum and film, said to be an important factor in film preservation and high fidelity sound.

Home Movie Show to your friends, learn to balance your program with an appealing choice of professionally-produced subjects and your own films. And don't attempt to show all your films. Hold the show down to a running time of, say, about one hour. Remember, it's good showmanship, at home or at the theatre, to leave your audience wanting more.

Summer Color: We can visualize the fun some movie makers are going to have this summer shooting color—someone's sunburn in Kodachrome!

Looking Ahead: While 16mm talkies are here, both sound cameras as well as projectors, at present they are not generally in home use. Nevertheless, the day is not far off when home sound recording will become as usual as silent movie making now. When that day comes there will be many valuable family silent films in one's library to which sound can be added; in many instances, will be. But sound films must be recorded and run at 24 speed, and the silents were originally taken at 16. To match perfectly the tempo of sound-film action—avoiding the noticeable jerky action of sound dubbed silent film—many amateur movie makers, looking ahead, will today make a regular practice of shooting their present day silent pictures at 24 speed.

Lamp equipment includes 500-watt, 2-inch F 1.85 projection lens, and a new design single-phase shutter which provides maximum light efficiency. Triple claw film movement engages three perforations simultaneously. Thus, film with two adjacent torn sprocket holes can be used successfully.

Conveniences include pilot light; shutter knob for manual operation in threading; safety fuse mounted externally; microphone and phonograph pick-up socket; 1600-foot capacity with permanently attached swivel reel arms; and matched brass and bakelite mechanism gears.

For professional and semi-professional use, the 750-watt Senior Model Amprosound is available. All Amprosound 16mm projectors are licensed under Western Electric patents.

Kodascope Libraries. The well-known film library organization, Kodascope Libraries, Inc., has issued a fourth edition 16mm talking-film catalog. Consisting of 64 pages, profusely illustrated, the Kodascope Talking Film catalog lists many single-reel and feature-length subjects, which are available for rental from 15 branch libraries, located in key

cities of the country. Such memorable pictures as "King of Kings," "Grass," "Oliver Twist," "The Covered Wagon" and Walt Disney's "Mickey Mouse" and "Silly Symphonies," are available only from Kodascope Libraries.

Kodak Snapbook-and-Frame. Keeping snapshots, or enlargements from movie frames, in an album and at the same time exhibiting any of them in a picture frame, although still in the album, is afforded amateurs by the combined use of two new devices of the Eastman Kodak Company, just announced. One is "The Snapbook," a 20-page album with a gilt spiral binding; the other "The Snapbook Frame" which is a leather-finished gilt embossed picture frame into which the album is inserted with any page in front that is desired.

Thus, without need of turning pages to find favorite shots as in the ordinary album, you may enjoy them exhibited in an attractive frame on desk, table or wall, as long as you like and you may put a different page in front at any time. With a full-page enlargement, the effect is that of a framed single photograph. The "Snapbook-and-Frame" are sold as a complete unit. The Snapbook has covers of heavy, black, leather-finished material, 7 $\frac{3}{8}$ x 9 $\frac{5}{8}$ inches; the leaves provide 7 x 9 $\frac{5}{8}$ inch mounting space. The Snapbook Frame is 8 $\frac{1}{4}$ x 10 $\frac{1}{4}$ inches, to take an 8 x 10 inch enlargement in front of the Snapbook.

Announced in connection with the Snapbook-and-Frame is another new device, the Kodak Snap-sticker, which is a sticker gummed on both sides for easier mounting of snapshots in an album. Each booklet contains 800 Snap-stickers.

Color Titles. Bell & Howell announces Titlecraft color titles for Kodachrome film in both 16mm and 8mm size. These color titles are brilliant, clear, readable and are available in four different tones: Blue, with purple and pink overtones, pale pink letters; Dark green, with gold overtones, pale gold letters; Brown, with orange overtones, yellow letters; and Brown, with green overtones, pale green letters. Color tones may be ordered to fit the character and mood of the sequence into which the titles are to be spliced.

The lettering may be had in standard type or junior letter styles on any background shown in the Titlecraft sample book, copies of which are available at Bell & Howell dealers.

QUESTIONS and ANSWERS

By F. HAMILTON RIDDEL

1. What manner of hand cranking a movie camera gives the best results?

When using the hand crank, always crank with a wrist motion. Do not use a full arm motion, as such motion will usually prove jerky. The wrist movement is less tiring to the operator and, more important, results in more even exposures.

2. At normal speed, what governs the exposure in a motion picture camera?

The shutter and the lens diaphragm. Located back of the lens, the shutter opens and closes and, on most amateur cameras, its speed is constant and non-adjustable. Therefore, the manner of controlling exposure is by varying the lens diaphragm, an iris mask that covers the margin of a lens, which regulates the amount of light that passes through the lens on its way to the film.

3. What causes a few pictures at the end of my scenes to be blurred?

No doubt, camera movement. Don't move your camera in closing a scene until the mechanism has actually stopped. Always be deliberate in starting and stopping a camera, otherwise end-frames will show up blurred.

4. How often should a camera gate be cleaned?

It is good practice to clean the gate before shooting each and every roll of film. Small particles of emulsion scrape from film, accumulate at the gate, and may cause film scratches. Clean the film gate with a moistened cloth only. The gate should be perfectly smooth and highly polished when ready for use.

5. What is the easiest way to shoot a backlighted close-up?

Backlighted shots as a rule call for the use of a reflector. However, if you are not inclined to trouble, then place your subject in front of a solid background—a hedge will do—with the back of the subject towards the sun. The sun should be fairly high in the sky, so that its rays will strike both shoulders of your subject, with particular brilliance spotting the subject's head. Be sure to increase exposure for the face, if it is not brilliantly lighted.

6. Why should early morning and late afternoon scenes, using Orthochromatic film, be avoided?

Light, at these times of day, is tinged with yellow. As is known, yellow is composed of green and red. Orthochromatic film has strongest color value in the blues, and is not so sensitive to greens, reds, and yellows. It is not advisable, therefore, to use Ortho on color in which greens, reds, and yellows predominate. Orthochromatic film has many uses, however, and is inexpensive. For early morning and for late afternoon shooting, Panchromatic film is better suited.



Eastman Kodak Snapp Book and Frame.

7. Can you explain my difficulties in projecting Dufaycolor 8mm. film? If the pictures are in focus, the titles are not; and vice versa. Also, how will I splice titles into Dufaycolor pictures?

Titles for use with Dufaycolor film should be photographed **through** the film base—since Dufaycolor pictures are photographed in that way. Therefore, when making titles for Dufaycolor subjects, put your titling film in the camera with the emulsion side **away** from the lens, but with the shiny side **toward** the lens. Since the base is clear, no difference in exposure will be necessitated.

Titles should be spliced into Dufaycolor pictures exactly the same as in ordinary Reversible film—that is, with the frames headed the same way, and with the emulsion side of both up, or with the smooth side of both films down. The secret of having them focus uniformly lies in photographing the titles **through** the film base, as already explained.

The foregoing remarks apply, of course, to both 8mm. and 16mm. Dufaycolor.

Note: As a service to amateur movie makers, we extend a cordial invitation to write in questions which will be answered in this column. Address all such letters to:

Questions and Answers Column

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SCIENCE STEPS INTO OPTICS

A Chronological History of Glass and Lenses

By EARL THEISEN

(Associate Editor,

International

Photographer)

5400 B.C.—A glass bead was found in an Egyptian tomb of this date. It is doubtful, however, whether it was made intentionally; since the bead is of a green sodium calcium glass and evidently of volcanic origin.¹

3500 B.C.—The Egyptians started making ornaments at this time. This glass was a vitreous paste, which was molded by them in clay. It was opaque and closely resembled a fine sandstone. The Egyptians made long strings of beads and other ornaments from this paste which they greatly prized.

The glazier's art reached its highest perfection in Egypt during 1370 to 1200 B. C. The Greeks also knew of glass at this time.³

1643 B.C.—The glass statue of Sesostris was cast at this date.

640 B.C.—A concave mirror made of bronze and covered with silver foil was used by the Greeks for starting fires. Plutarch, (49-120), mentioned that the Romans used focusing mirrors for lighting the sacred fires. These concave focusing mirrors were shaped so the light rays striking them were reflected to a point. This convergence of the light rays raised the temperature sufficiently to start combustible material to burn.

According to an improbable tradition, Archimedes used such mirrors to set on fire and destroy the Roman fleet which attacked Syracuse in 214 B.C.

350 B.C.—The Phoenicians started to make ornaments of opaque glass, such as cameos and rings.^{3, 46}

150 B.C.—Ptolemy, the Egyptian scientist, because of his studies in light refraction, evidently knew of a transparent glass.

140 B.C.—In China, the Emperor Ou-Ti (Han Dynasty) established a glass factory to make beads and other ornamental glass. For lessening sun glare, the Chinese at this time used a tea-colored stone in spectacles.

100 B.C.—The Phoenicians, at Sidon, are generally credited with making clear, transparent glass.

20 B.C.—The Phoenicians invented the art of glass blowing. The art of working glass reached its highest perfection under the craftsmanship of the Phoenicians.

20 A.D.—The Romans devised many improved methods of working glass. Cicero (106-43 B.C.) records the use of glass in theaters and other public places.^{2, 3, 1}

23-79 A.D.—Pliny the Elder describes the use of hollow glass spheres filled with water so as to focus light rays for burning. He calls them, "pilae vitreae."⁴

50—Seneca (4?-65 A.D.) mentions convex lenses

and light colored after dispersion from angular reflection.

70—St. Gregory writing in 560 A.D. states that colored windows were in use at this date.

130—Aulus Gellius refers to metallic mirrors of concave form.

1052—Allhazen first described the effect of magnification of simple lenses.⁵

1090—The Venetians first started to make art glass.

1200—Windows composed of pieces of colored glass held in place with strips of lead so as to form a picture or pattern were first made in Europe at this time. Many examples of these early leaded art windows still exist in churches throughout Europe.

1255—Salvino D'Armato degli Armati is generally credited with the invention of spectacles.^{6, 12}

1280—Roger Bacon was the first to describe definitely a convex lens.^{7, 8}

1260-1280—Meissner mentions in his writings that old people derive advantages from spectacles.^{9, 5}

1282—Nicolas Bullet is credited with the use of spectacles in signing a document. Record of this exists in the archives of the Abbey of Saint-Bayon-les-Gand.¹⁰

1303—Alexander de Spina, a monk of Pisa, Tuscany, Italy, is credited with the re-invention of spectacles in a document dated 1303 in the archives of the St. Catherine Convent.¹¹

1305—On February 23, Giordano da Rivalto stated in a sermon that, "It was only twenty years since the art of making spectacles was discovered."^{10, 47}

1360—Tommaso da Modena painted the first picture in which spectacles are known to have appeared. This picture is in the church of San Nicola, in Treviso, Italy.

1555—Thomas Charnock mentions the first glass plant in England in a bit of poetry written in 1557:

"As for glass makers they be scant in the land,
Yet one there is as I do understand,

And in Sussex now his habitation,

At Chiddingsfold he works his occupation."^{13, 14}

1561—Jarius Aucott made the first colored optical glass. It was green and was used for spectacles. (Although colored glass dates from the Roman Empire when it was used for windows, this was the first time it was made for optical purposes). It is of interest to note, also, that the glass of the early Egyptians was mostly of a greenish color.

Blue glass is first mentioned by Richard Pierson in 1672;¹⁵ Red glass, by Mayer Oppenheim in 1755. Edward de Laval conducted exhaustive researches in glass coloring by metallic salts in 1764. Amber lenses were made by Elias Solomans in England in 1832. Thomas Gaffney conducted experiments in coloring glass between 1863-1881, using metallic salts and solar energy. Lavarock made a blue glass lens of plano-convex form backed with a green glass.^{16, 13}

1568—Daniello Barbaro described the use of a lens on a camera obscura. (This was not for photographic purposes, but was used for outlining landscapes.) He also made it clear that both concave and convex glasses were known when he says,

"having made a hole in a window of a room from which you wish to observe, as large as a spectacle glass, then take an old man's glass, convex on both sides, not concave like the glasses of youth with short sight." This is the first written record of a camera with a lens.

1571—Leonard Digges is credited with making the first telescope.

1590—Hans Laffrey and Zacharias Janssen, in Holland, are believed to have combined two single lenses, thus forming a compound microscope.^{17, 18}

1591—Battista Porta, in Naples, in his second edition of "Magia Naturalis" describes the procedure of making a convex lens, and lists the materials used.

1608—Johann Lipperhey, in Holland, made a telescope.

1610—Gallilei, who is generally known by his Christian name, Gallileo, is generally credited with the invention of the telescope because of his fame as an astronomer. This, however, is an error; though Gallilei made a telescope which consisted of a combination of convex lenses of long focus, with a concave one of short focus. This form is still retained in the ordinary opera glass, which is generally designated as the "Gallilean Telescope."¹⁹

1611—The first American glass factory was established at Jamestown, Virginia, with Italians as craftsmen. This factory was in reality a mint because they made beads for the Indians, who used the beads for "Wampum." Colored glass was made here in 1622.^{20, 18, 19}

1621—Willebrord Snell discovered the law of refraction of light. In 1638, Rene Des-Cartes restated the law thus, "The ratio of the sines of the angles of incidence and angles of refraction is constant."

1635—George Bontemps, in France, started the first factory for making flint glass.

1638—Rene Des-Cartes built a machine for lens grinding, and made other improvements in the optical science.

1660—Manzini wrote his, "L'Occhiale All'Occhio Dioptrica Practica" in which he described a lens-making technique.

1661—Martin Clifford and Thomas Paulden made a flawless crystal glass.

1662—Athanasius Kircher made lenses and invented his Maltesian burning mirrors.²¹

1664—Giuseppe Campani, on March 6, read the first paper to be presented before the Royal Society.

This paper was a description of a molding device for making improved lenses.

1666—Eustachis Divinis constructed the first lens of rock crystal, which he used in a telescope. The first rock crystal spectacle lens was used in 1690.

1666—Francis Smithwick, on May 14, was granted patent No. 149 by Charles II, of England, for a method of "Grinding Optike lasses." This is the first patent on record for lens grinding.

1667—Robert Hooke described the making of small bead lenses for microscopes.^{22, 23}

1671—Pere Cherubin d'Orleans wrote "La Dioptrica Oculaire," in which he described his machines for constructing and polishing lenses; and his method of making telescopes, binoculars, and microscopes. This book also includes much of the theory of the optics of these inventions.

1673—The first mirror glass was made in England.

1676—Ole Roemer discovered the speed of light by astronomical observation of the speed and time of the eclipses of Jupiter's moons. His calculation was 186,000 miles a second.

1678—Christiaan Huygens propounded the undulatory theory of light upon which all optical science of refraction and lens making is based. According to this theory, the propagation of light may be likened to the waves in a pan of water after it has been disturbed.

1700—"The Tattler," published in London, in an issue in 1710 tells of the first glass factory. They made optical glass for spectacles, in England.

1704—Richard Cole, in England, is credited with making the first conical lens.

1708—Geoffroy made a burning glass that was 36 inches in diameter for the Duke of Orleans.

1715—Antoni van Leeuwenhoek, in a letter on September 28, tried to discourage Leibnitz from organizing a school of optics. This fact is significant, in that it indicates the probable value of such a school during this time. Optics during 1600-1700 was not the accredited science that it is today.

Leeuwenhoek is known as the Father of Bacteriology because of his discoveries of many bacteria which he called, "Wretched Little Beasties." His first discovery of bacteria was about 1673, and from then until his death in 1723 everything coming into his hands was placed under one of his 247 microscopes.^{24, 25}

(Turn to Page 28)



"ArtReeves"

ArtReeves

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Patent Abstracts Appertaining To Color

(Kodak Research Laboratories Bulletin)

K/72

Br. 434,514. M. C. Meere; W. H. Hackett. Surfaces for multicolor printing are prepared by making an outline drawing indicating the color components of the original, transferring this drawing to a soft, impressionable smooth surface, stippling this surface, "painting-in" selected portions of this surface to form a representation of a color component of the original, and from this preparing, by a line-block process, a photographic reproduction in reduced size on a surface, as of metal, to form the ultimate printing surface. The process is then repeated for the other color components.

K/2

U. S. 2,020,564. G. G. Moreno. Assigned to C. M. C. Corp. Color films for the additive color process are prepared by exposing two film strips with the emulsion layers in contact to form isomorphous color-separation images, developing the films separately, and printing every other pair of isomorphous images from both films upon a single positive film in juxtaposition.

K/23

Br. 435,222. A. J. Arnulf. In a system for color photography, in which a number of monochrome images are obtained simultaneously by means of an equal number of separate objectives, plates having parallel faces are placed in front of the objectives in order to increase, reduce, or eliminate parallax.

K/25

U. S. 2,022,432. A. Rodde. Apparatus for the projection printing of monochrome images on lenticular film advances three monochrome image frames for each advance of the lenticular film and a separate color filter is introduced for each frame. A stationary banded filter is positioned in front of the lenticular film. Corresponds to Br. 408,109; Fr. 751,407.

K/25

U. S. 2,022,768. G. Heymer. Assigned to Agfa Ansco Corp. Projection printing of lenticular films is effected with the embossings facing the incident light and a multicolor filter in position in front of the original film. Corresponds to Br. 399,984; Ger. 612,942; Canadian 340,905.

K/25

U. S. 2,022,978. K. Rantsch. Assigned to Opticolor Akt.-Ges. For taking and projecting lenticular films, the objective has spaced from its diaphragm a multicolor filter, the colors of which recur cyclically, and masking means are applied to the zones thereof which appear to be too great because of the distortion of the objective.

K/3

Br. 434,434. G. B. Harrison. In order to produce a large number of copies of a multicolor-screen master negative or positive without undue damage to the master, sets of intermediate color-separation prints

are made from the master on plain sensitive material, and from each set finished copies are prepared by printing the components, each with light of the appropriate color, in register on multicolor-screen sensitive material. In either or both printing stages, the images may be slightly diffused in known manner to compensate for lack of registration of the screen elements on the master and final copies.

K/34

Br. 435,484. H. D. Murray; H. Baines; R. A. S. Grist; Dufaycolor Ltd. In sensitive material employing a monochrome or multicolor screen, the color screen is separated from the emulsion by a varnish layer which comprises a composition containing a resin of the kind known as "Glyptal," e.g., Paralac, which also contains a drying oil, such as linseed oil or tung oil. Inert substances, such as cellulose esters, or chlorinated rubber compounds, or metallic driers may also be added to assist in the drying of the layer.

K/4

U. S. 2,020,607. G. Heymer. Assigned to Agfa Ansco Corp. A film for color photography has at least two superposed emulsion layers, each dyed the color to which it is sensitive, at least one of the layers containing in addition a filter dye which absorbs part of the spectral region transmitted by the layer. Corresponds to Br. 379,374; Partial duplicate of Fr. 727,899; Partial duplicate of Ger. 576,374; Partial duplicate of Canadian 327,079.



NEWS-WEEK PHOTO BY WENDELL MACRAE

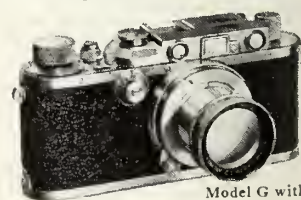
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TECHNICOLOR SHOOTING IN INDIA

(From the Journal of the Motion Picture Society of India)

A very interesting demonstration was arranged this month, for members and non-members of the Society interested in Technicolor photography.

The American Technicolor film expedition, headed by Mr. James Fitzpatrick, was shooting black and white as well as Technicolor. The Society requested Mr. Winton Hoch, the chief cameraman of the expedition, to give a demonstration of his color camera work, and in spite of the very heavy program before him, Mr. Hoch agreed to take the members of the Society with him to the location where he was shooting scenes for his Technicolor film.

On the 6th of March the party accordingly went to a small but picturesque fishing village of Danda, near Bandra, to shoot the scenes. The members of the party were very much impressed by the quick and systematic work, the choice of material and the exposing of Mr. Hoch. In spite of the rush work, M. Hoch took the trouble to show and explain all parts of the Technicolor Camera in detail and also gave an outline of the processing and printing of Technicolor film.

Every member of the party enjoyed the expedi-



tion immensely and was thankful to the Society and Mr. Hoch for the opportunity afforded to them of seeing the working of the latest (3 color) Technicolor Camera and shooting.

MOTION PICTURE SOUND RECORDINGS

(Continued from Page 5)

ated in this plate circuit. These constitute a form of plate circuit filter.

Plate circuit filtering is employed for the same reason as grid filtering: to prevent oscillation through the feed back of energy from higher level stages due to common coupling in the power supply. The principal purpose of the resistor **PR** is to provide a voltage drop (**IR** drop) so that the d-c. plate voltage applied to the first amplifier tube will not be as great as the plate voltage applied to the tubes in the second stage of amplification; but in connection with the condenser this resistor serves also as a plate circuit filter.

Functioning of the Plate Filter

The plate filter used in the second stage is more true to type, and for that reason will bear description. It is formed by the by-pass condenser **CP** and the reactance, or choke coil, **PC**. Since the d-c. ohmic resistance of the choke coil **PC** is low, it offers almost no opposition to the passage of the direct plate cur-

low impedance path for the signal current in the plate circuit from the tube plate, through the transformer primary and the by-pass condenser **CP** to the cathode of the tube. This prevents any loss of the signal voltage by keeping it from entering the power supply. This combination of condenser and choke coil also forms a filter that tends to smooth out any fluctuations in the plate supply current that may have got by the regular filter in the power supply. This is the reason for the plate filter in the final amplifier stage.

This combination of inductance and capacity in the plate filter forms what is known as a low-pass wave filter. Such a filter derives its name from the fact that it passes all frequencies below a certain "cut-off" value, and attenuates, or practically prevents the passage, of all frequencies above that cut-off value. The plate filter described for this amplifier cuts off well below the audio-frequency range (20 to 20,000 cycles per second); so it does not hinder the passage of direct current, which is considered to be a current of zero frequency, to any appreciable extent.

In the next, and final, chapter on this subject of the basic amplifier, we will discuss cathode biasing, the power supply for the amplifier, and the design of a high-power output or bridging amplifier that will greatly increase the effective power output of this amplifier and permit it to be used in a large public address system or radiotelephone transmitter.

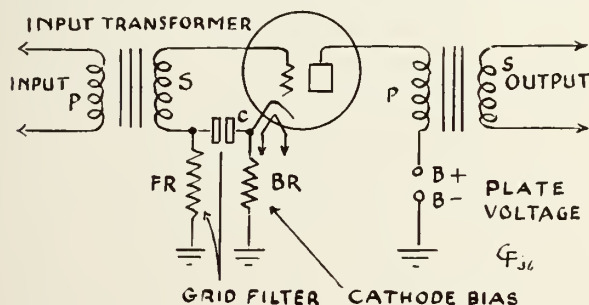


Fig. 2. Schematic Diagram of Amplifier showing Grid Filter and Cathode Bias Circuits.

rent; but its impedance to an alternating current, such as would be transmitted back from the final amplifier stage in the form of feed back energy, is very high, and the voltage drop in the choke coil would be so great as to prevent any of that feed-back energy reaching the plate of the tube.

The by-pass condenser **CP** serves to provide a

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MOVIES IN COLOR

(Continued from Page 7)

tem which works essentially like a glorified rubber-stamp. From each color-separation negative, a "matrix" is made. This is done by printing onto a film coated only with dichromated gelatin. Where this has been affected by the printing-light, it swells upon "development" with warm water, so that the image appears in relief. The matrix is moistened with a dye of the desired color, and pressed against a strip of plain film. Like a rubber-stamp, it passes its dye-image on to the second film. By repeating the process, two, three or any number of separation-images may be combined in a single, full-color print.

While this process was being perfected, Technicolor began to meet some competition from the two-color bipack processes like Multicolor, Cinecolor, etc. These used a standard camera through which ran two films, face to face. The front film was of the Ortho type, and received the blue image. In its coating it carried a reddish stain roughly equivalent to a 23-A filter, which prevented anything but the red-orange rays from exposing the rear film, which was Panchromatic. Prints were made on double-coated positive stock, which carried an emulsion on each side of the celluloid. Each side was printed from one of the separation-negatives and dye-toned its proper color.

This bipack system today takes care of two of the three color-separation negatives in Technicolor's new three-color process. Behind the lens of the camera is a square block of glass, made from two prisms. The inner faces of these prisms are gold-sputtered, to make a partially reflecting mirror. One-third of the light passes through this mirror, then through a green filter, to record on a strip of panchromatic film the green-component image. The remaining two-thirds of the light are reflected to the right-hand side of the camera, where after passing through a magenta filter which excludes the green components, they expose a pair of bipack films, producing the red and blue negatives.

Printing subtractively by the Imbibition method, each of the matrices made from the three separation negatives is printed with a dye of a color **complementary** to that recorded in its particular negative. Thus, the red-record negative is printed with cyan blue-green; the blue negative prints with yellow, and the green, with magenta. This seems, at first sight, contradictory, but it is very logical if you look more closely into the working of the process. Consider the image of a red object. In the red-filtered, red record negative, the image of this red object is very dense. When the matrix is printed, the image of this portion is not affected by the printing-light, and so is represented by a depression in the relief-image. If we simply applied a red dye to this matrix, our red area wouldn't print at all, while the other parts of the picture, which were of different colors, would be printed in red. Instead, we use a dye of a color complementary to red with this matrix: Thus the adjoining areas which contain no red, but may contain some blue-green, are printed in that color, while our red object remains unprinted. Since this object did not register on the blue and green negatives, the other two matrices will show it as a high spot. Printing from them, first with magenta (which transmits red and blue) and next with yellow (which in projection filters out the blue), the image of that particular area on the screen will be red—which was what we wanted all along.

What is coming in color is hard to forecast. Even the most optimistic of the Technicolor engineers do

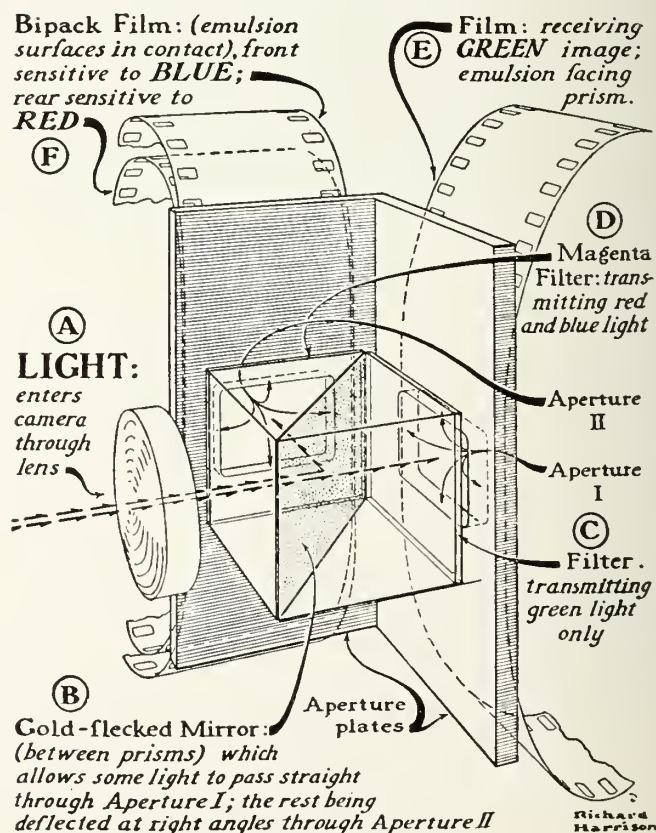
not insist that their present process, good as it is, is the ultimate, and a great deal of undercover development is going in both here and abroad. The Paramount-Eastman experiments with the Keller-Dorian process seem to be bearing excellent fruit, and the process is likely to be seen in production before many months.

Technicolor, due to certain basic patents issued some time ago to the late Dr. Leonard Troland, seems to have the inside track on the professional use of Eastman's monopack amateur process known as Kodachrome. In this, the three color-separation images are formed in three separate layers of emulsion on a single film; each emulsion being sensitized only to its proper color.

In Kodachrome, the three images are developed and reversed into positives, then each is converted into a deposit of its proper subtractive dye. The process is very successful in the 16mm. and 8mm. fields, but appears to have, in its extension to 35mm. professionalism, a number of problems which have thus far baffled the best brains of Hollywood and Rochester. Over in England, the mosaic-screen Dufaycolor process is being exploited, and may yet be heard from.

One thing only is certain: We have today better color than was ever before available and producers and public are showing more and more interest in color. Whether color remains as a part of our daily filming depends less and less on the laboratorians and more and more upon the skill and intelligence of the directors and cameramen who actually make our natural-color releases. If they react with their traditional artistry, nothing can stop the permanent coming of color.

HOW TECHNICOLOR'S THREE COLOR CAMERA WORKS (Courtesy of "Fortune")



Technicolor Specially Built Camera.

TAILOR MADE WIPES

By W. V. DRAPER

SOME months ago the writer found himself confronted with the problem of making a number of wipes and laps with no equipment other than a Bell & Howell camera.

It is a comparatively simple matter to animate wipes against black and white cards if one has a stop motion machine. In this instance, however, there seemed to be none available. Moreover, the cutter had supplied negatives of the scenes instead of lavender prints, and there was no time to wait a day for the lab. to make them.

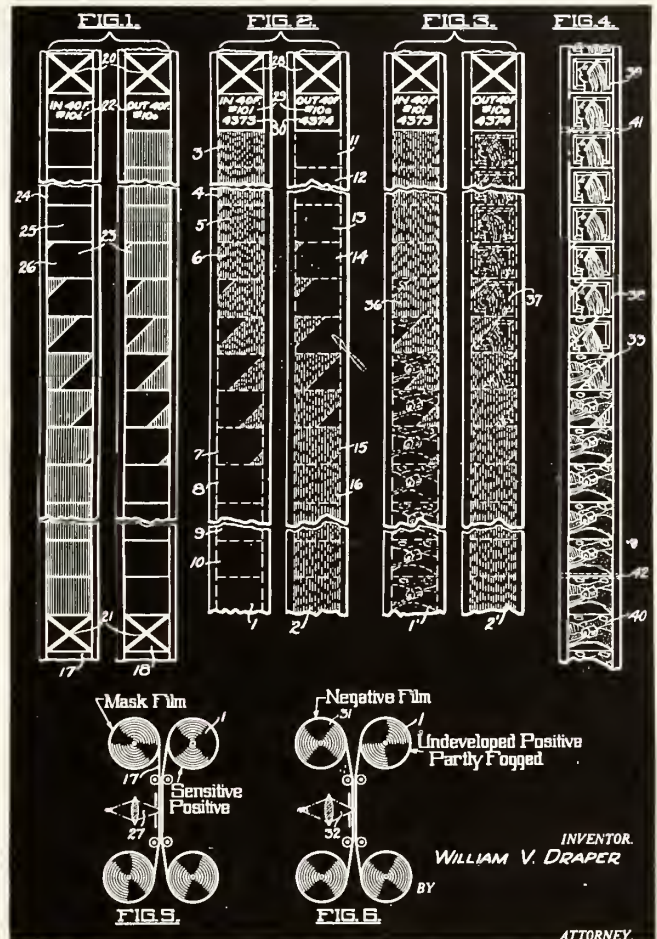
The problem was solved in the following manner: A pair of black and white matts representing the two parts of the wipe was provided with frame marks exactly five feet ahead of the first frame of the wipe. These strips were placed in contact with raw lavender stock, the frame marks transferred, and an exposure of the matt made in the raw lavender stock. The lavender stock was then rewound, the negative of the scene matched up with the starting mark previously transferred from the matt and a print made against a white card.

The result of this operation, when developed, was a lavender print of the scene with the areas corresponding to the overlap of the wipe blocked out. It only remained to start the two lavenders on a common frame and make a dupe of one, rewind and dupe the other. The result now was a composite of the two scenes wiped together on a dupe negative and, in the opinion of the writer, of very good quality; as good, in fact, as a straight dupe could have been made. The only limitation was the skill of the operator, as the series of steps permitted everything to be done in contact. There were only two films used at a time and nothing about the process could possibly interfere with the quality, provided those portions which were supposed to be opaque were really opaque.

Now these steps are about as many and about as laborious as the usual way of making wipes and were there nothing more to say in its favor it would only be another way of making wipes which could be resorted to in an emergency. It happens, however, that there is something else to be said. While trying to simplify the process one day this suggestion came to mind: Make the fogged lavender stock up in advance, then there would be nothing left to do but print and dupe. Yes, this very ordinary process had one distinct advantage. You could make up a thousand in advance if you wished. It permitted factory production. In fact it became a "Tailor Made Wipe."

As the idea grew, other advantages presented themselves. Any camera or printer capable of handling two films could be used to finish a "Tailor Made Wipe." The laboratory, even though its only equipment was a continuous printer, could make wipes by buying this pretreated stock.

Accordingly, a few samples were made up and tested. On the outside of a 50 foot can was an illustration depicting the type of wipe it contained. When the operator opened the can in the ruby light of his print room he found two rolls of lavender film. One was marked "In." The other "Out." Upon opening the roll marked "In" he found a boldly marked frame a sufficient distance from the front end of the roll



to make threading convenient and, beneath it, this information, "Wipe in 5 Feet."

This frame he matched with a predetermined frame on the negative which is five feet ahead of the wiping point, and prints. The operation is repeated with the "Out roll." It was found that an inexperienced print hand who had to be told each step could complete the process in five minutes up to this point. After development the duping is practically a repetition of this step so that it is a reasonable to suppose that 10 minutes work on the part of a printer will complete a wipe. It can be readily seen that this would be an extremely economical method.

Other enlargements of the idea include the establishment of a central plant which would concentrate on making up these "Tailor Made Wipes" in every conceivable design. Small users would figure out what wipes they desired and buy that particular group from the central plant which would carry all designs and lengths in stock. Large users would be provided with cabinets in which a full stock of wipes would be kept. As the operator used out of the stock a delivery man from the central plant would replenish the stock.

Color wipes are no obstacle to this process as contact printing throughout makes registering the multiple film much easier than when a matt is introduced between the two films.

The accompanying illustration taken from the patent application which is being secured by one

of the major studios, shows the various steps. Fig. 1 is the matt. Fig. 2 represents the undeveloped lavender stock after having been fogged through matt No. 1. Fig. 3 shows the same piece of lavender stock after a scene has been printed over the fogged and unfogged area. Fig. 4 is the composite dupe, while Figs. 5 and 6 illustrate method of procedure.

Another useful application of this principle would be the making of temporary wipes and laps for use while cutting the picture. Half sized wipes going from the scene to black and black to the next scene could be supplied the trade very simply and cheap-

ly and would eliminate the necessity of using a title to explain the absence of the effect during preliminary showings.

The process is being developed at 937 North Sycamore in the Centaur Films Building. Details are being worked out and suitable equipment is being built. If present plans materialize the 16 mm. field will be supplied in the near future with "Tailor Made Wipes" which they will be able to buy over the counter in any design desired and which they can either finish in their cameras or have completed at the nearest local 16 mm. laboratory.

THE VIEW FINDER

(Continued from Page 14)

tion. In calling attention to portrait photographers and their peculiar quality of judging composition, it might be stated that they have learned to read upside down. It might be a good stunt to be able to see things upside down, but the correct viewing of the subject through the above described home-made view-finder would affect the matter and consequently produce better portrait studies.

The object of this article on the part of the author

is to call attention to this commonly neglected fact of the deceptive nature of the view-finder and to induce the photographer to think and consider its perverted qualities. Then too, it may serve as an inducement for some researchive mind to delve into the question of perfecting the view-finder thus adding to his wealth for the benefit of the entire art of photography.

SCIENCE STEPS IN

(Continued from Page 23)

1716—C. Hertel made a meniscus lens. This is thought to be the first of this type of lens made.

1721—Sir Isaac Newton comments upon lenses and the uses of mirrors in optics. Among his many contributions to optical science, probably, his most important is the introduction of pitch in the polishing processes.²⁵

1758—John Dolland, in England, invented the achromatic lens. His first achromatic lens consisted of a combination of a glass with a central chamber for water. Dolland was later successful in making an achromatic lens by combining two glasses of different densities. To get a correct focus on all colors in an image from a lens, it is necessary to construct the lens of two mediums of different densities. This is necessitated from the fact that the red rays of the spectrum are retarded less in passing through a transparent medium than the blue or violet rays. This difference in speed varies with different densities of glass, and when a light ray composed of the spectral colors strikes a medium at an angle, some of the colors are slowed up more than others. This slowing up of the light ray bends it, and spreads it

in a fan-shaped spectrum. In order to eliminate this situation and bring all the colored constituents of the white ray to the same focus a combination of two lenses is needed, one that will bend one end of the spectrum one way and a second that will bend it the other. Such a lens is known as an achromatic lens.¹²

1766—Benjamin Franklin devised for his own use the first bi-focal or double focus spectacles. The first ground bi-focal was made by Isaac Schnaitman, of Philadelphia, in 1836. The first insert bi-focal was made by Benjamin W. Hanna, 1884.^{26, 6}

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STORMING HOLLYWOOD

(Continued from Page 16)

cast of 75 to 100 or more cause a not inconsiderable heat load in themselves. Fortunately, the plant at Mesquite Street that supplies refrigeration to the sound stage has a capacity of nearly 500 tons of refrigeration per day. This is divided as follows: There are two huge Frick type VSA ammonia compressors with a combined refrigeration capacity of 270 tons per day. There are also in this engine room two Vilter type HDA horizontal ammonia compressors with a combined refrigerating capacity of 225 tons per day. This capacity requires with all its auxiliaries, the combined horsepower of some 1,500 H.P.

A serious factor in the operation of the refrigerated sound stage was that of removing gases from the lamps together with the vitiated and other foul air from the room and replacing the removed air with cold or pre-cooled fresh air in order to prevent the warming of the prevailing temperature by the introduction of warm, fresh air. This was nicely handled by the installation of a large air-pre-cooling bunker system, consisting of approximately 6,000 feet of two-inch ammonia pipe in addition to the main refrigerating system of nearly four miles of ammonia piping installed on the ceiling of the stage, over which fresh air is drawn by 25,000 cubic foot per minute positive pressure blower that in turn exhausts the air under an approximate pressure of one ounce into the stage proper. Foul air is expelled through a suitable, controllable exhaust hatch located some 42 feet from the floor in the ceiling of the stage, being easily manipulated from the stage floor by an elaborate counterweight system. After tests were made of the air circulation it was decided to increase this air flow by a recirculation of the warmer air near the ceiling of the stage through the installation of four large Utility air screw fans located approximately seven feet from the ceiling, giving an additional air circulation of some 16,000 cubic feet per minute of free air across the main ceiling refrigerating coils. This combined air flow of some 41,000 cubic feet per minute of air assures a clean, cold, fresh air supply and an average temperature of 26 degrees above zero or other temperatures as required (it is also possible to lower the temperature of this stage to approximately zero if wanted) enabling persons' breath to be extremely visible and maintenance of sets of real snow and ice for indefinite periods. The usual misty haze accompanying ice or snow scenes is completely eliminated on the stage by virtue of this large cold air flow. This haze is in reality a water vapor released by the ice when the directed rays of the lamps strike it. As the cold air and ammonia pipes continually dry the air by absorbing the moisture, the slight vapor given off by the ice becomes visible in a fairly dry atmosphere. This phenomena is not confined to the refrigerated stage but is found in every cold locale.

Snow as mentioned in this article is manufactured

on the stage by taking 300 pound blocks of ice and running them through a portable preliminary primary crusher, feeding this crushed ice through a suitable conveyor to the hopper of the special aerated blower, that in turn, forces the aerated particles of pulverized ice through a flexible nozzle, a distance of nearly 150 feet, forming a fine light snow that is placeable in any quantity and amount where and as needed.

In a recent test conducted by Nels H. Rosberg, Manager of Production for the California Consumers' Corporation, and the author, R. Van Slyker, the snow machine was capable of putting through approximately 10 tons of ice or making approximately 80 cubic feet of snow per ton—some 800 cubic feet of snow in an hour. This test was conducted under normal operating conditions used in snowing one of the extremely large sets of the Columbia Pictures Corporation for their latest production.

The snow as made by this machine is nearly a duplicate of nature's product, giving all the effects of real snow—being edible, enabling persons to make snow balls, snow men, wash each other's faces, and indulge in any form of snow sport, as skiing, sleighing, etc.

Another of the features of this refrigerated stage is that of creating large, natural frozen ice ponds in their normal winter dress. In freezing ice skating ponds, it was found that an acoustical treatment was necessary in order to overcome floor rumble. This was carried out, and the result more than justified the trouble met in determining what form of treatment was need to faithfully reproduce the slither and scrape of persons skating over the ice. The ice for the ice skating pond is formed by sloughing layers of pre-cooled water directly on top of this acoustical material, allowing the water to freeze in the low temperature of the stage, and making the smooth, even ice surface desired in any thickness.

As can be imagined, the actual setting of cold frozen sets give a most stimulating effect to the members of the cast, causing involuntary shudders and involuntary slips on the ice without undue discomfort to the members of the company. All this goes to make for the utmost in realism for scenes of this nature. The photographic value of this manufactured snow gives a most natural and satisfactory effect as all of the crystalline luster of real snow is captured by the camera. This plastic make-up allows for quick set dressing and the arting in of various properties and allowing extreme latitude in the designing of sets. With from 500 to 600 members of the various studios employed over the period of the last ten weeks at this stage, it has been found that the general health of the employees at the refrigerated stage is far better than elsewhere, in fact, only two colds are recorded out of this number of men and women, which, on any set at any time of the year, is an exceptional fact.

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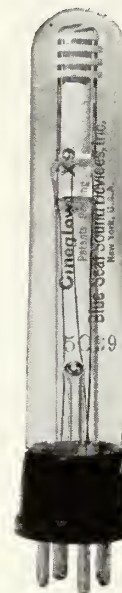
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THE INTERNATIONAL PROJECTIONIST, a monthly magazine published in the interests of the projectionist. Interesting, instructive. Yearly subscription U. S. and possessions, \$2; foreign countries, \$2.50. James L. Finn Publishing Corp., 580 Fifth Ave., New York.

COMPLETE COURSE IN FLYING—If interested in aviation, see Roy Klaffki, 1605 North Cahuenga Ave., Hollywood.

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COLOR PHOTOGRAPHY UNDER THE SEA



By

PAUL R. HARMER

PAPER IV.

Most of the photographers are familiar with reliable color systems used for photographing under water, but when taking colored pictures under water, the greater the depth the greater the darkness and loss of color contrast.

The most successful system of securing under water photography that I know of is the one developed by Henry Fischer. Twenty-one years ago Henry started to work in the laboratory of Mack Sennett.

When Mr. Sennett decided to have color photography he didn't intend to stop short of having everything. Ernest Crockett developed the under water camera and right away the Big Boss wanted under water colored photography.

Henry got the job of reproducing in colors the

various shots that Ernest made. In the first trial Ernest had the swimming pool drained and painted the bottom in squares of different color, then he had the tank filled with water, put Mr. Sennett's bathing girls to work for a test and this was the start.

After a few trials Henry got the color system down to a perfect balance. These pictures were released through Educational.

Mr. Fischer had a color card made which was set at a given distance from the lens. Then the cameraman took a reading with a spectrometer which gave the gamma for the red, blue and yellow.

This first gamma strip which was made when the first shot was taken was the master and all the negatives shot in this set that day were prized accordingly.

The negative used was hypersensitized fifteen times and of a bi-pack nature. Equalizing filters were used to bring the spectrum to a normal range, thereby reducing the intensity of the green and increasing the red and violet. Shortly after this Mr. Fischer made a trip to Europe, where he found a dye so strong that one pound of yellow, one pound of blue and one pound of red would make a million feet of master positive with a black and white sound track.

The deepest that color motion picture photography can be taken by sunlight, with this system, is about fifty feet.

Deep sea color is successful with lamps using polarized light.

ROSS FISHER VISITS HOLLYWOOD

Ross Fisher, for many years one of the ace cameramen of the motion picture industry in the United States and Great Britain, has departed for his home in Mexico City after an equipment shopping expedition in Hollywood.

Mr. Fisher is a member of Local 659, I.T.A.S.E. and M.P.M.O., also a charter member of A.S.C. He went to the City of Mexico in 1932 upon call from a motion picture producer and, during the past four years, has been busy every day in active camera work or production.

Accompanying Mr. Fisher on his Hollywood trip was Senor Roberto Morales of the production company of that name, located at the City of Mexico where all other motion picture studios in Mexico are located.

Those in addition to the Morales Studio are Industrial Studios; Mexico Film Studio; Classa Co. Studios; Cuernavaca Studios.

Here is the clearing house of motion pictures for the entire Spanish speaking world. Here actors, technicians, craftsmen, writers, laborers, producers, financiers, etc., do their stuff to serve an empire extending from the Rio Grande and the islands of the sea through the entire continent of South America, Spain and Portugal.


Trade Unions dominate the situation and an outsider would quickly note that the immigration laws of Mexico are pretty tight. Young Mexicans are in control and, while the rules are rather drastic, they are fair and written with the idea of keeping the reins in the hands of the men who built the budding cine industry of Mexico and intend to see that it doesn't get away.

Mr. Fisher states that the Mexican producers are careful to use Mexican and Spanish stories in their pictures and that they are working hard to progress rapidly toward their ideals. They are getting into color now and if there ever is such a development in the cine as three dimensional cinematography, Ross Fisher will not be far behind the pioneers when the announcement is made.

Mr. Fisher does not want to discourage United States capital against investment in motion picture production in Mexico, but he does wish to warn against inadequate capitalization and the producer with lack of finances will not have an easy time south of the Rio Grande.


Among other business scheduled for this trip to Hollywood, Mr. Fisher's associate, Senor Roberto Morales brought along for cutting his latest picture, "The Novice," in color. The work was done by CINECOLOR, INC.


The **International Photographer** extends to Mr. Fisher and his associates in Mexico congratulations upon their success against great odds.



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CINEMACRONI

(With Sauce for Those Who Like It)

By ROBERT TOBEY

HOLLYWOOD HONEYMOON

or

The Loves of Lili Liverblossom

By R. THRITIS

Lili Liverblossom, beautiful star of Flamboyant Films, Ltd.

Perriwether Murgle, her Public Relations Counsel.

Olga Bendova, her rival.

Willy Nilly, a large Bald Eagle; genus *haliaetus leucocephalus*, in case you're the technical type.

Nelly Nilly, his wife.

Hiram von Willeze, a noted film director sliding down the balustrade of fame.

Bill, a ghost writer.

Potty, a ghost.

Synopsis of preceding chapters:

Lovely Lili Liverblossom is afraid Olga Bendova will get the part she covets in Flamboyant Film Company's new super-epic, "Sacred and (censored) Love." She calls Murgle into conference, which is about the least she ever calls him. Perri suggests a marriage to Hiram von Willeze as a publicity stunt to reawaken interest in Lili and cinch the coveted part for her. In his hurry get to von Willeze, Perri slides down the drain-pipe outside Lili's penthouse apartment, instead of taking the elevator. He gets caught part way down, and enlists the aid of Willy Nilly to help him to the ground. Instead, the Eagle carries Willy off to his lair on a high cliff miles from Hollywood and the cut-rate drug stores.

Frantic at the loss of her P. A., Lili figures out that a ghost might be able to help her track down the Eagle and rescue Perri. So she enlists the aid of an old friend, a ghost writer named Bill. Bill writes her up a ghost and sends it over to Lili's apartment. The ghost arrives in jig time; a real honest-to-gosh ghost that can pass through walls and can't get along without a chain to clank. Lili, with her usual breezy informality, dubs the fellow Potty. After a brief chat, the two set off in search of Perriwether Murgle.

Meanwhile, in the Eagle's lair, Willy Nilly has gone off in search of some fish and snakes for dinner. Nelly Willy sidles over to where Perri is sitting, and looks coyly up at him. Perri hardly knows what to expect.

Just in the nick of time Potty and Lili arrive on the scene to break up the tenseness of the situation. Soon Willy arrives with some grub, mostly dried fish he has stolen from some fishermen on a nearby Dry Lake. He and Nelly go into the kitchen to get dinner ready, so Perri seizes the opportunity to attempt an escape. He has some trouble getting Lili off a couple of eagle eggs, which Lili has promised to sit on while Nelly is busy. Finally, they are ready to escape. Potty picks up Lili and in no time is out of sight. Perri, thinking he can still fly, flaps his arms and jumps, but falls, and only barely manages to catch hold of a piece of rock twenty feet below. And there he hangs. Now we go on with the story.

CHAPTER XXI

Heigh-ho. Isn't that disconcerting. Here I've used up all the space for a synopsis. Guess Perri will have to hang from that cliff for another month! Tough going, kiddo.

KNEECAP REVIEWS

(No space left on my thumbnails)

"THE UNGUARDED HOUR." A really enthralling murder mystery; one that will grip you in every minute of its running. Truly mystifying to the end, it is well-written, thoughtfully produced, and excellently directed.

Loretta Young and Franchot Tone are the young married couple around whom this unusual story revolves. Tone, playing a young English barrister with one eye on his wife and the other on the Attorney-General's seat, is a polished though restrained performer. Loretta Young as his lovely wife, will lose none of her following. Just as well for them, too, that they are so good, or Roland Young would steal the picture.

The fate of a picture like this trembles before the director, so the excellence of this film speaks well for Sam Wood. Photography by James Van Trees is above reproach.

"FURY." A searching analysis of mob psychology; a relentless faying of the urge to lynch. Director Fritz has employed his camera as a scourge to lay bare the rotten tissue around the heart of the screaming pack that is a mob.

The picture itself cannot be described except in full book form, and derives its chief power

from its dramatic intensity and the basic nature of its emotional pull. Spencer Tracy carries away top acting honors, while Sylvia Sydney does well with a part that offers nothing compared with what Spencer has to work with. Photography is by Joseph Ruttenberg.

"THE MOON'S OUR HOME." Madness envelopes Margaret Sullivan and Henry Fonda, and you'll love 'em half-baked. Maggie has done nothing better than this madcap role of Cherry Chester, beautiful screen star who believes the publicity about herself. Henry onda as Anthony Amberton, spoiled novelist, complements her splendidly, although he is not quite up to his high water mark in this.

Old-time director William A. Seiter is far from old-time in his treatment of the script. Photography by Joseph Valentine is topnotch.

In the supporting cast, Charles Butterworth is much too overdrawn to be funny in the stock role of the rejected though wealthy suitor. Margaret Hamilton has a noteworthy supporting role.

• • •

"THE FIRST BABY," an average homey sort of picture with Johnny Downs, Dixie Dunbar, Shirley Deane, Marjorie Gateson and Jane Darwell. Not startling in any respect, the film is more or less devoted to the mother-in-law problem, and is interestingly and intelligently treated. Downs, Dunbar and Deane start the ball rolling in a more or less amateur fashion, but as soon as veterans Marjorie Gateson and Jane Darwell come into the picture the thing rolls along under its own power. Direction is by Lew Seiler and photography by Barney McGill.

• • •

Worth going to see even if you have to pay for a couple of dull features and play hookey on 'em is Walt Disney's Mickey Mouse in "THROUGH THE MIRROR." There is a sequence using animated playing cards, hilariously burlesquing the outlandish dance sequences in some of our "better" productions, that is a gem in itself.

• • •

"THE DANCING PIRATE." Very little to recommend this. It is slow and draggy, of uneven tempo, with interminable climax and anti-climax. The use of color throughout adds nothing to the spectacle except changes in color ratio, an error you don't encounter in black-and-white. Distressingly, too, this picture seems to mark the return to the indiscriminate use of bicolor capes as an irritating prod to color consciousness.

Charles Collins is not the Fred Astaire whom he seems to be imitating. He is nimble and graceful enough as a dancer, but hasn't the Astaire nonchalance and personality. Kept on the screen long enough, of course, he may lose his self-consciousness and go places. Frank Morgan plays his usual incoherent role, and drives you a little cuckoo with it all. The only moments of relief are when the piquant Steffi Duna appears on the scene. The girl is no beauty, but has the saucy charm and graceful abandon of a dryad. What beauty she has is not enhanced by the adobe makeup plastered on her face and torso in an attempt to make her look Spanish.

Next best mention goes to Victor Varconi and Jack LaRue, as the very doughy heavies.

Production is by Jock Whitney, direction by Lloyd Corrigan, story by Emma Lindsay Squire, cameras by Technicolor, photography by William Skall, and release is via R.K.O. You figure out who is to blame.

• • •

"LITTLE MISS NOBODY." Herein Jane Withers definitely becomes a little Miss Somebody. It's Jane's picture and nobody takes it away from her. Her work in this would do credit to far weightier years. However, detracting from the value of the picture is the fact that it is patterned so closely after a recent Shirley Temple opus.

Supporting cast is well chosen. Little Betty Jean Hainey is almost as good as Jane Withers, if less impish. Harry Carey has a fine fat role, and does well with it. Direction by John Blystone is good. Bert Glennon photographed.

• • •

"SAN FRANCISCO," a picture proving that no matter what type of music beautiful Jeannette MacDonald chooses to sing with that glorious voice of hers, the public will love it; and no matter how much blood is caked on Clark Gable's face, that ole Gable personality shines forth just the same. The film also proves that M-G-M's technical staff can cook up an earthquake that is just about as realistic and horrifying as any of old Mother



Nature's breeding.

Production should do a box-office cleanup. It has everything the doctor order—thrills, ehills, laughs, suspense, and a hearty love interest—and all are expertly blended by veteran megger W. S. Van Dyke. Oliver Marsh is responsible for the first-rate photography.

The picking of tough mug Spencer Tracy for the role of Father Mullen was a quaint piece of casting. Can you imagine that hombre in clerical garb? But don't get hysterical before you see him in the part. He's the tops. Jack Holt, Ted Healy, Margaret Irving, and Jessie Ralph shine from out the supporting cast.

Seen on a local marquee:

MR. DEEDS GOES TO TOWN
EVERY SATURDAY NITE

• • •

And this from a studio daily shooting report:

THERE GOES THE BRIDE
(two days ahead of schedule)

HOLLYWOODCUTS, by the Shovel Boys. (They dish the dirt.) • • • The good news comes from New York that Edwina Booth, who seven years ago played the White Goddess in M-G-M's production of "Trader Horn" is at last recovering from what was considered an incurable illness. Stricken shortly after her return from Africa with the location unit making "Trader Horn," for six years the girl hovered between life and death. She traveled the world in search of a cure for the little known malady that had attacked her. Her father, himself a physician, gave up his practise to devote his life to study and research in aid of his daughter. No hope was held out for Edwina's recovery. The last few years she has spent in bed, in a darkened room, emaciated, waiting to die. Now comes word that in the New York psychiatric clinic Dr. Edward S. Cowles, Edwina Booth is able to walk and stand the sunlight again on her once lovely body. A complete cure is looked for by the girl and her family. • • •

Out of Circulation Notice. Fred McMurray married Lillian LaMont, reported to the studio just to make sure there weren't any retakes in the offing for his latest picture, and then sailed with his bride on the Lurline for a long honeymoon in Honolulu. Fred's courtship has been troublous, for Paramount, when they began to push Fred ahead, tried to keep him unmarried. He fussed and fumed for three years, and then couldn't stand it any longer. • • •

Here's a rib-tickler. Mae West, Queen of Up-holstery and first lady of the Risque, proposes to defend her reputation at all costs. Many's the check she has quietly made out in favor of the Assistance League, a prominent Hollywood charitable organization. And she has told the League that they can have a contribution from her any time they ask for it. But the other day she balked when she was asked to appear in person at the League on behalf of charity. She said she couldn't let reporters and the public actually see her in the role of a good woman. She was afraid it would spoil her standing! • • •

Don't look now, Miss Sugarpuss, but there's a fellow stealing your scene.



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INTERNATIONAL PHOTOGRAPHER

—HOLLYWOOD—

FIFTH YEAR

AUGUST, 1936

VOL. 8
No. 7

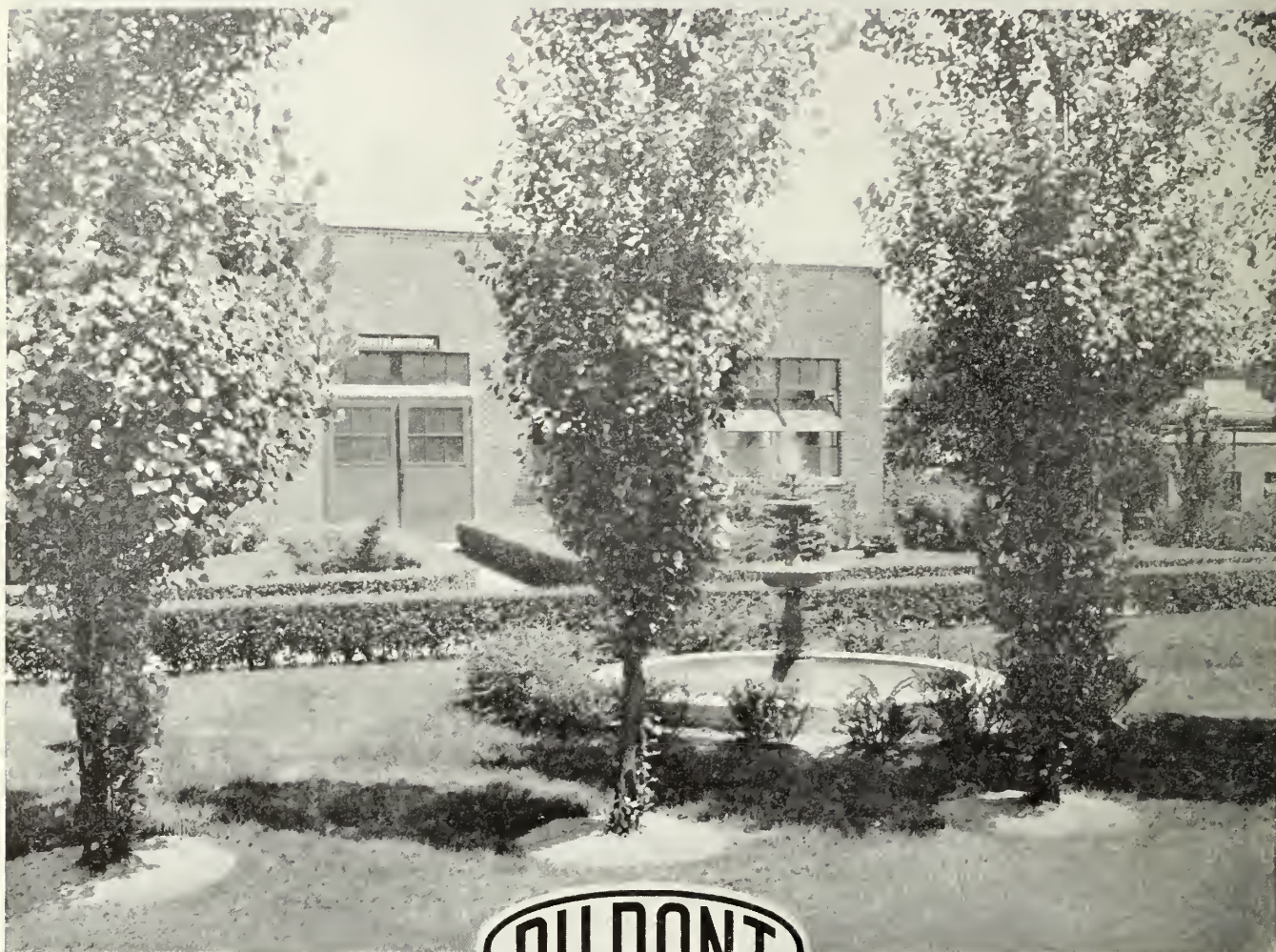


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This glorious shot of the Yosemite Valley was snatched by the versatile camera of Cameraman William Marshall at the time when the waters are most active and beautiful in that place of magic. It shows the Valley at its best.

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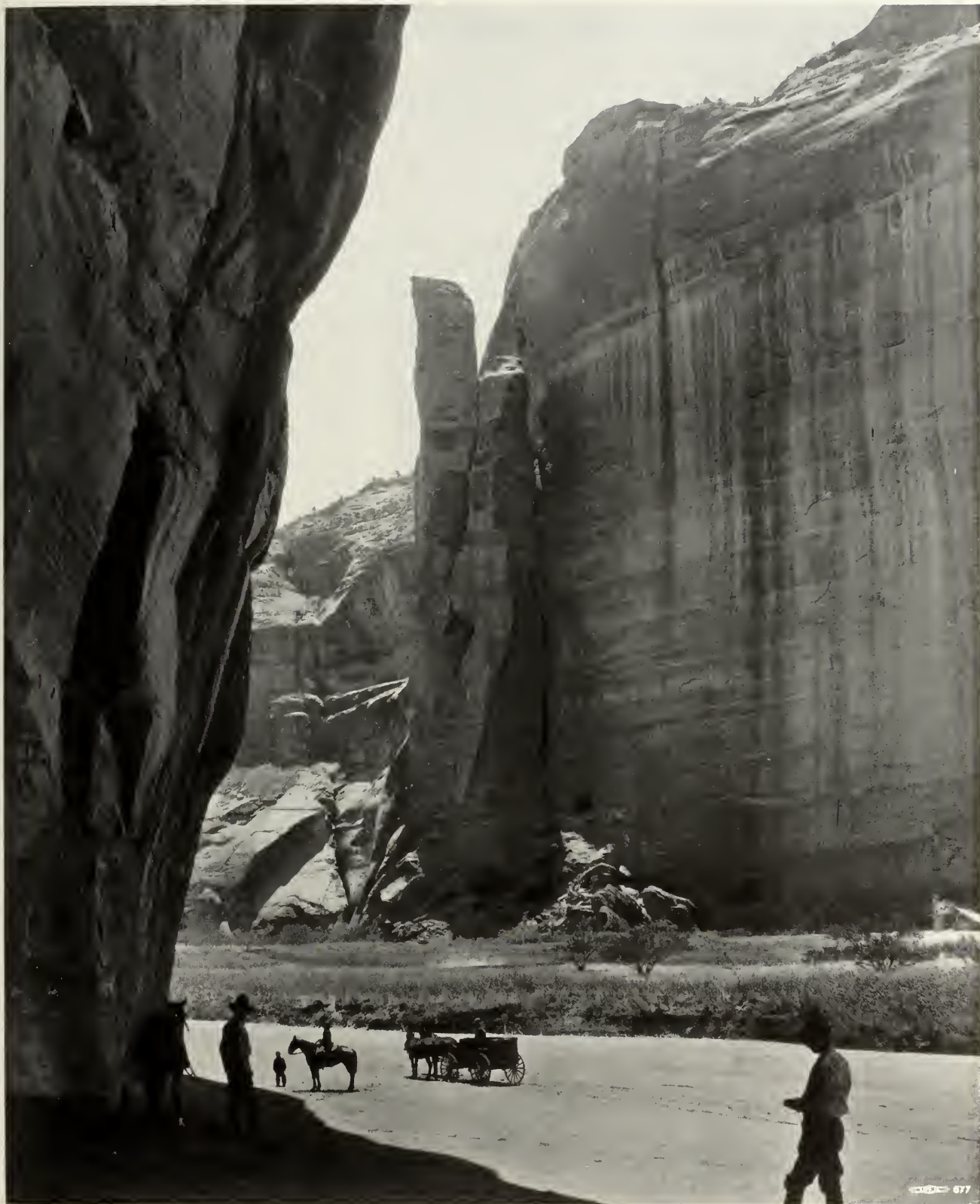
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Edward H. Kemp thought this picture worthy of his "good box" as he rode through the Canyon de Chelly, Arizona, once upon a time. It is one of nature's marvels and is a little brother to the Grand Canyon of the Colorado. If the reader desires to know a lot about Canyon de Chelly, just look up an Indian and ask him to tell some stories about it.

INTERNATIONAL PHOTOGRAPHER

MOTION PICTURE ARTS AND CRAFTS

Vol. 8

HOLLYWOOD, AUGUST, 1936

No. 7

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A Monthly Publication Dedicated to the Advancement of Cinematography in All Its Branches; Professional and Amateur; Photography; Laboratory and Processing, Film Editing, Sound Recording, Projection, Pictorialists.

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Frontispiece by Edward H. Kemp

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Printed in the U. S. A. at Hollywood, California



80 IPEU SERVICE ENGRAVING CO



Ye Tek-Nik Towne of Olde Hollywood



Pre-war readers of INTERNATIONAL PHOTOGRAPHER will remember Ye Tek-Nik-Towne of Olde Hollywood wherein was exploited the commercial side of this community. During the fighting the Olde Towne fell into a slight decline, but of late there has been a decided turn for better things and the editors have decided that Ye Olde Tek-Nik-Towne shall again be a feature of this magazine.

Those who do not know would be amazed to learn of the volume and value of the allied industries of the motion picture concerns centered in the world's Film Capital, and the people who conduct, manage and direct these concerns are quite as interesting as the concerns themselves.

All the former residents of Tek-Nik-Towne are invited to move in again and all the new citizens will be received with open arms.

COLOR

There will be more important color news in our September issue. Look out for it.

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Fernstrom-Dunning Color Travelogue Photography

By RAY FERNSTROM



This novel camera was designed especially for color travelogue photography. To increase the efficiency of a small crew, a special top was built similar to the laminated fuselage of the Lockheed airplane.

In this top was built an airplane cockpit, with hatch doors that drop down into the body out of the way. A four point airplane mount carries the camera level with the top of the car and between the four wheels, cutting down on swerve and bouncing on running shots. This same mount swings round and bolts in any direction. For low running shots there are three other mounts, allowing for various levels. The top being solid enables us to set up high for stationary scenes.

Body, top and mount having been reinforced, no variation occurs at any speed. During the last two months we have covered more than 7,000 miles

on a new picture in Dunning Color, in which 2,000 or more miles were covered carrying the camera on the top airplant mount.

Since B batteries would not last long on a two months' trip of this sort, Dunning Process Co. installed six wet batteries and a converter, giving us 110 volts, A.C. to run the camera motor. For scenes far from the car we use 500 feet of cable on spools with swinging hangers. In addition we used one set of B batteries. These we utilize if we need a couple of Photoflood lights off our 110 volt, A.C. line, or, if more than 500 feet from the car.

(After six years of shooting color travelogues in various processes, with a motley assortment of cameras and improvised camera cars, Mr. Fernstrom feels that he now has an ideal union in this type of car and the Dunning color camera.)



1. On location at Echo Summit, on the Lake Tahoe-Placerville, State Highway, with the Dunning Color Process, shooting a three reel travelogue of California. In the cockpit Mr. Fernstrom is standing. At the right is Dodge Dunning of the Dunning Process Co., Hollywood.

2. Shasta Canyon, California, showing how the closed hatch serves as a parallel for stationary shots. Jim Cowper with Ray Fernstrom

at the rock dedicated to the old-time stage coach drivers of California's early days.

3. In the center is Fernstrom's camera car from Dunning Process Co. for shooting color movies. In the open cockpit are Ray Fernstrom and Jim Cowper. At the right is Mole-Richardson's new motor-generator truck.

THREE NEW INDUSTRIALS IN WORK AT HOLLYWOOD

Three new films of a wide variety of interest are in production by Metropolitan Industrial Pictures of Hollywood, for leading corporations.

One production unit, headed by Hobart Brownell, Metropolitan director, is covering the State of Oregon for a sound picture for Portland General Electric Company. This picture will outline the company's development of natural resources in the territory and special power applications in industry and agriculture. This is a two-reel production.

Finishing work is being done on a three-reel sound film for California and Hawaiian Sugar Re-

fining Corporation of San Francisco. A photographic unit was sent by Metropolitan to cover the growing of cane in the Hawaiian Islands and also to show all the refining operations at the company's plant at Crockett, California.

Metropolitan of Hollywood is also at work on a new synchronized version of "The Romance of the Reaper," for International Harvester Company of Chicago. The new sound version of this story will depict in three reels, the invention, more than a century ago, of the first successful grain cutting machine and then the development down to date of the various harvesting equipment.



MORE ABOUT LIGHTING

By LEWIS W. PHYSIOC

Technical Director, International Photographer

DESPITE the great advances made in the manufacture of photographic materials, cameras and general equipment, the matter of lighting is an all-important subject. We frequently hear the question: What is the one element most inimical to good photography?

The question is easily answered—it is **flat lighting**.

What is more serious, the evil is still apparent,

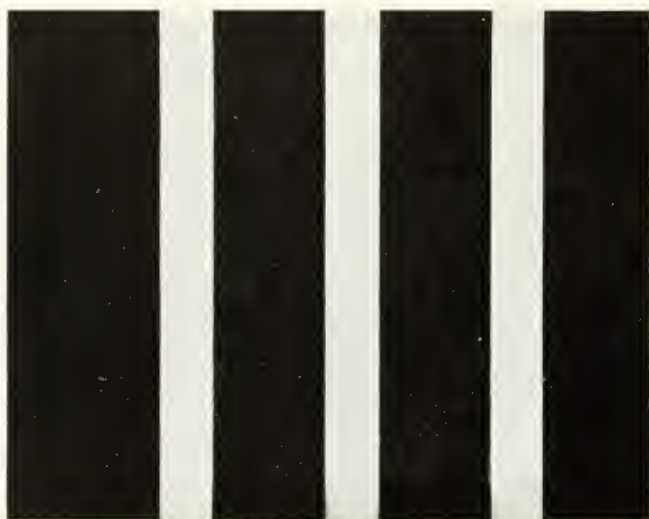


Figure 1

regardless of the aforementioned improvements in the materials and apparatus.

We may look for the reason in the fact that the developments in esthetics have not kept pace with those of science and mechanics.

Of course this suggests a controversial point. But it cannot be denied that we live in an age that does not encourage these studies that demand patience, close application and considerable time.

This matter of properly lighting a photographic subject is embodied in that category of esthetic studies that cannot be learned overnight. It cannot be supplied, even, by a faultless use of exposure meter, the modern lens and fancy camera and sensitometric processing. It comes only as a result of earnest study, much experimenting, close observation and mental recording of beautiful chance effects in natural subjects.

One of the commonest examples of which we may learn from chance effects is experienced while sitting in the projecting room watching the "dailies." They are running an elaborate scene where some special effect has been carefully designed.

Everything in the matter of equipment the studio can boast has been used—lights, lights, and more lights. But the "shot" doesn't seem to "click." No

one seems greatly to enthuse. The end of the scene comes. Some of the lights are turned off, leaving just sufficient, as was thought, for the boy to step in and hold the slate. Everybody gasps. There, undesigned, by the merest chance, is the beautiful effect so much desired, so carefully striven for. But everything had been used but a knowledge of lighting. That old bugaboo, **flat lighting**, had destroyed all effect.

But that is not all that **flat lighting** destroys—it may totally destroy all idea of **form**.

From the foregoing discussion we get the suggestion that lighting embodies three important elements necessary to artistic photography:

First, the rendering of effects.

Second, the preservation of natural beauty.

Third, the suggestion of proper form.

This last element, form, is necessary to the others, for both depend upon a faithful rendition of the form.

The greatest problem of the motion picture photographer, in particular, is preserving, and even favoring, the beauty of his feminine star. For a long time it was thought that this was possible only by flat lighting—the burn-up method. We are gradually proving the error of this method.

The rendering of form is commonly called **modeling**, and depends upon the proper distribution of light, shade and shadow. The getting of effects and preserving beauty is achieved by the degree of contrast—the proper choice of the quality of light, its modification, by mediums or diffusion, and the strength of the highlights and shadows.

This matter of lighting is very difficult for the photographer as compared to the painter.



Figure 2

The artist can render very delicate effects without danger of flatness, because he can build up the

modeling (or *chiarascuro*, as he calls it) by a wide range of tints not available to the photographer, who must paint only in light and shade. Of course, color photography greatly lessens the evils of flat lighting, but by no means dispenses with the necessity for artistic lighting.

The matter of photographing women is so important, it is well to impress upon the student a few points that may be learned by observation and simple experiments.

Beauty may be preserved, and even enhanced, by the correct diffusion of lights. And the sources should be as simple as possible. Remember that every light casts its shadows and that a multiplicity of shadows raises havoc with a beautiful face.

Diffusion may be accomplished in two ways—more properly speaking, the light may be modified by diffusion and dispersion by reflection. The mediums of diffusion and the reflecting surfaces are all important; as are, also, the distance of diffusing mediums from the source of light, and the distance of reflectors from the subject. Try a few of these experiments:

Stand before a window facing the north; hold a piece of white paper in one hand and interpose the other hand before the light and the paper, and observe the softness of the shadow. This proves the beautiful dispersion of the north light.

Perform the same experiment, using various reflectors, tin, harsh aluminum, softer aluminum, then a white sheet or matte surface cardboard. The harshness or softness of the shadow cast will doubtless suggest which should be used on a delicate face, particularly on the eyes.

Then spread a piece of white paper on your desk; place upon it some object round in form, with some sort of protuberances on the surface. Throw your desk light across the object from the side, so as to bring out the form sharply. Then you might say to yourself: "If I photographed a girl in that sort of light, I'd make her look like her grandma!" This might be the case.

But now you take a piece of tracing paper, or



Figure 3

ground glass, and hold it over the light. The effect on the object is much more pleasing, but the shadow of the object on the paper is still well defined and a little harsh and the protuberances still show up pretty strong. Gradually draw the diffuser away from the

light and nearer to the object. It will then be noticed that the cast shadow becomes softer, the protuberances not nearly so harsh. And what is more striking, the light side of the object appears more



Figure 4

brilliant, the shaded side glows with a soft reflected light and yet the form of the object is perfectly maintained.

If you do not believe that flat lighting destroys form, look at Figure 1 of the accompanying cut. See if you can determine the forms of the three uprights: Yet it is supposed to represent three different and distinct forms. The picture was taken with the lighting falling upon the objects directly in front. Such lighting frequently is employed by photographers who use a strong light directly over the camera or very nearly in such a position, and also by holding the flash bulb in such a position. This scheme of lighting cannot produce any degree of shading (or modeling) so necessary to represent the form of an object.

Figure 2 shows the uprights photographed with the same light, except that it is now placed so as to shine upon the objects from a side position, clearly bringing out the forms of the uprights. One can hardly believe the two pictures represent the same objects. However, there is still a chance for improvement, for there is a suggestion of harshness as seen in the rough texture of the surfaces. The light is a little too direct. Sometimes a face, even though beautifully formed, has certain little blemishes, like the pores and excrescences of the skin; too direct a light exaggerates these little faults.

Figure 3 shows a further improvement. The same light is used and the same side direction, except that in this illustration the light has been diffused after the manner suggested in the experiment of holding the diffuser close to the objects. Observe how the roughness in the texture of the surfaces is now smoothed out and **beautified**. Yet the modeling is still preserved, only softer, with less contrast. This is the ideal scheme of lighting for feminine heads.

Figure 4 is merely a simple suggestion of the possibilities of securing dramatic and pictorial **effects** by employing cast shadows. Broad, plain surfaces may be enhanced in interest by throwing cast shadows upon them; and, at the same time, the form of objects may be accentuated.

Motion Picture Sound Recording

Chapter XXVI

IN the three preceding chapters, we discussed the design of a basic amplifier for operation from direct current supplied by batteries, the associated input and output circuits, an arrangement for measuring plate current and grid and plate voltages with a single meter, formulas for meter conversion and range extension, and the applications of this high-grade amplifier. In this chapter we continue that discussion by showing how that amplifier may be improved in design and adapted to operation from an alternating current source.

The Improved Amplifier Circuit

In Figure 1 may be seen the diagram of an improved model of this amplifier that is designed to operate entirely from an a-c source; yet this arrangement will provide amplification of sufficient quality and freedom from hum to permit it to be used as a recording amplifier.

It will be noted that the chief difference between this amplifier and the original basic amplifier, disregarding the power supply, lies in the grid and plate

fier, particularly those jacks in the plate circuits of each stage; but in order to simplify the diagram they were omitted.

The same components are used throughout this amplifier as were used in the original basic amplifier, the changes that have been made being entirely from the addition of other parts for the purpose of reducing the possibility of interaction between the stages of the amplifier due to common coupling. The quality of amplification of the original amplifier will be equal in every respect to that obtained with this improved model, but the original basic amplifier had the very great disadvantage of employing batteries for its power supplies.

Need For Grid Circuit Filtering

Beginning with the first stage of the amplifier diagrammed in Figure 1, it will be noted that there has been incorporated in its cathode and grid-return circuits resistance of 2500 and 100,000 ohms respectively and a condenser of four microfarads. The 2500 ohm resistance is for the purpose of providing grid bias voltage for the tube in a manner that will be

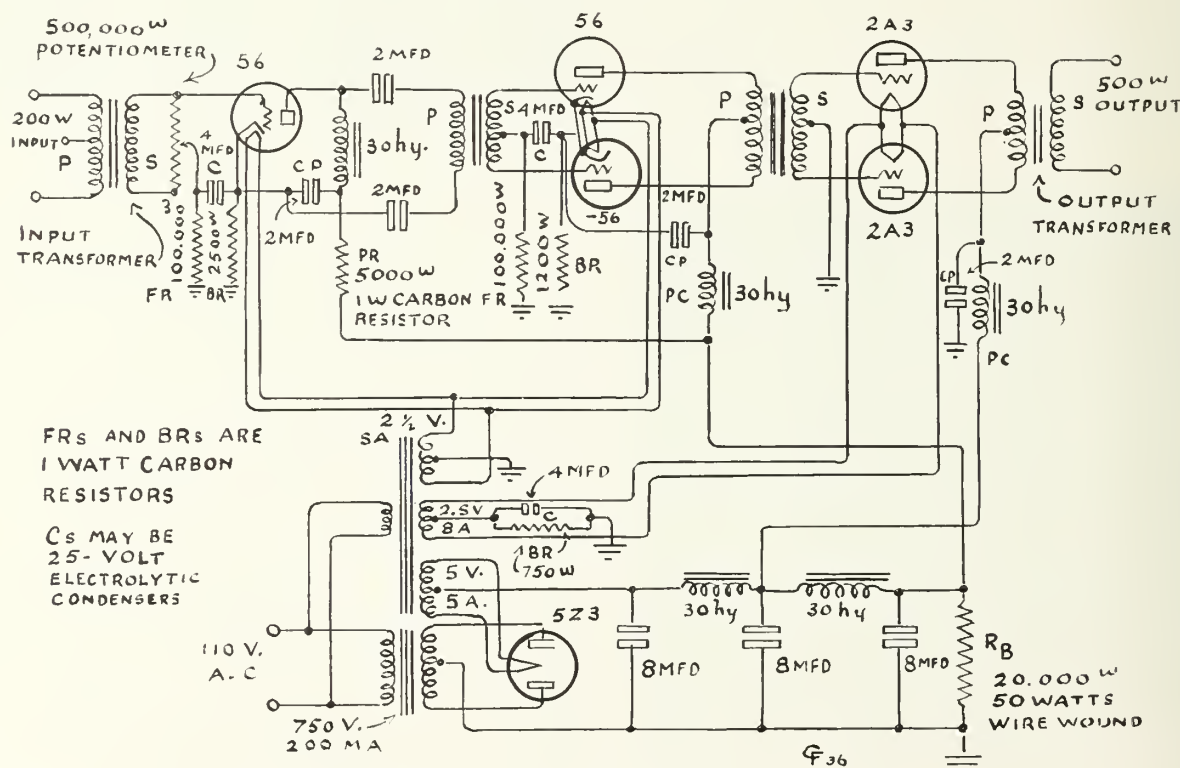


Fig. 1. Diagram of the improved version of the basic amplifier.

filtering of each stage and in the method of securing grid bias voltage for the tubes. The jacks for the single milliammeter, as discussed in the preceding chapter, should be included in this improved ampli-

discussed later; but the 100,000-ohm resistance and the four-microfarad condenser together comprise what is known as a grid filter.

This grid filter is necessary only because all three

of the stages of the amplifier receive their plate and grid voltages from a common power supply. If separate **C** bias batteries were used, as in the original basic amplifier, this grid filter (and the grid filter in the second stage of the amplifier) would not be necessary.

Since a common power supply is used, if the grid filter of this first stage—or even the grid filter of the second stage—were omitted, the amplifier would be inclined to break into a sustained oscillation due to feed back. This condition of oscillation occurs at a frequency within the audible range, so it produces a steady howling in the loud speaker connected to the output of the amplifier—the frequency of the howling sound being dependent on various circuit constants. This howling is sometimes called “motor-boating.”

Functioning of the Grid Filter

The feed-back of energy that produces this effect takes place in the following manner when grid filters are not employed. A voltage produced by a sound that disturbs the diaphragm of the microphone is fed through the input transformer to the grid circuit of the first amplifier tube. This voltage is amplified by that tube and by the two succeeding tubes of the amplifier, appearing as a greatly increased voltage in the circuit of the third amplifier tube. This relatively high signal voltage is fed back through the action of common coupling (common impedance) in the power supply to the grid circuit of the first amplifier tube.

The first amplifier tube and the succeeding two tubes then function to amplify this fed-back signal voltage, producing this time a very large voltage change in the third amplifier stage. This greatly increased energy is fed back in turn to the grid circuit of the first tube—amplified again—and so on and on until the signal voltage builds up to a steady value, which is determined by the tubes employed and the circuit constants. Of course, all this action and reaction takes place during an interval of seconds or fractions of a second.

When a grid filter such as shown in Figure 2 is used in the first amplifier stage, the energy that is fed back through the power supply from the final amplifier tube (or even from the second amplifier tube) is prevented from reaching the grid of the first tube by the grid filter.

Since the energy that is fed back is represented

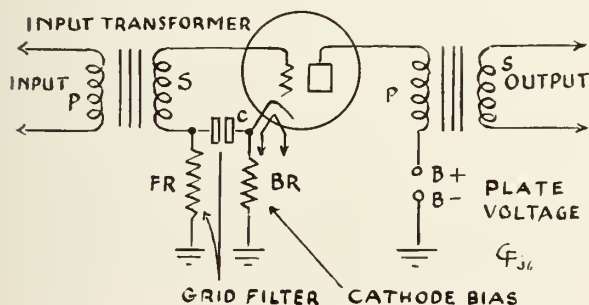


Fig. 2. Schematic Diagram of Amplifier showing Grid Filter and Cathode Bias Circuits.

by a flow of current in the order of a few milliamperes, or fractions of a milliampere, and since this fed-back current must flow through the grid-filter resistance **FR** to reach the grid of the first tube, the voltage drop through this high resistance is so great that no energy is left to effect the grid. In other words, all the power that is fed back through common

BY
**CHARLES
FELSTEAD**
ASSOCIATE
EDITOR



coupling in the power supply is dissipated in the filtering resistor **FR** and does not reach the tube grid.

It is to be remembered in this connection that a voltage, or pressure, is necessary to produce a flow of current, just as pressure is necessary to force water to flow through a pipe. Voltage, or pressure, however, can exist without a current flow (as in the case of a pipe that is capped on one end and yet has water under pressure in it). The voltage drop that occurs in **FR** is equal to $E = I \times R$, or in this case, $E = I \times 100,000$, where **E** is the loss of voltage that occurs in the resistance, **I** is the current in **amperes** that the voltage is trying to force through the resistance, and **R** is the resistance in ohms of the resistor, **FR**.

Other Effects of Grid Filter

The voltage that is produced across the secondary of the input transformer by a sound picked up by the microphone is applied directly across the grid and cathode of the tube by way of the condenser **C** in Figure 2. This condenser should have a capacity of at least two microfarads, and preferably more, so that it presents a path of very low impedance to currents of all frequencies within the audio-frequency range. In other words, it offers practically no opposition to the passage of alternating currents of audible frequencies, yet it acts as an open circuit to direct current.

The grid bias voltage produced across **BR** in a manner that will be described later is applied to the grid of the tube through the filter resistor **FR**. Since the tubes in this amplifier are intended to act as Class A amplifiers, the grid of the tube is never permitted to swing into the positive region of its **I_p-E_g** characteristic curve, and so no grid current ever flows.

The bias voltage produced across **BR** and applied to the grid of the tube through **FR** is thus purely a voltage, or pressure; and since there is no current flowing in this circuit due to the grid bias voltage, no voltage drop (or $I \times R$ drop) occurs in the filter resistor **FR**. As in the case of the capped pipe mentioned previously, we have only pressure (voltage) here, and as there is no current flowing, no loss of voltage occurs in the resistor **FR**. ($E = IR$; so if $I = 0$, then $R \times 0 = 0$, and **E**, the voltage drop, $= 0$.)

A grid filter is used in the second stage of the amplifier, since, although this is not as low an electrical level point as the first stage, there is still the possibility of feed-back from the final stage of the amplifier. No harmful effect is likely to result, however, if this grid filter is not employed; in which case

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Into Pictures—Through Pictures

By JOHN VAN PELT

(The Western Costume Company, of Hollywood, one of the world's largest, has agreed by written statement to make financial concessions to actors desiring to duplicate Mr. Van Pelt's idea. Actors may bring their photographers with them to the costume company if they desire. The Stillman Studios, of Hollywood, will co-operate, as no doubt will other photographers when they learn of the plan which Mr. Van Pelt has so generously passed on to fellow players.)

Although up to the time of issue, there has been no publicity other than by word of mouth, the editors have been informed that a number of actors have recently carried out in detail the Van Pelt plan of complete and up-to-date character studies.

Mr. Van Pelt informs us he will be happy to pass on any details resulting from his experience to fellow actors or photographers—write him in care of this magazine, or to his residence, 2147 Lyric Ave., Hollywood, or phone MCRningside 16121.

It is prophesied that intensive experimentation in the field of character studies and characterization will bring big results. It is obviously of interest to the actors, casting directors, photographers and costume companies, and while assisting in truer, prompter casting it aids in the discovery of talented personalities photographically fitted for the screen.—Editor's Note.)



CAME to Los Angeles in 1919 as an ex-lieutenant from army service. Became an East Hollywood community developer, subdivider and realtor from 1920 to 1935 and was associated in developing the properties known as Moreno Highlands, Silver Lake Terrace, Griffith Heights, and other tracts. Financial reverses caused me to cast about for new opportunities.

One day last October I dropped in alone at the Gateway Players' Club to attend a show. It turned out to be a tryout for parts. I was invited to try out for the part of Mr. Eversman in "Every Saturday Night" the male lead with fifty "sides"—a father of five youngsters. Thinking I had failed, I left hurriedly, telling no one at home of the evening's escapade.

Returning from a business trip to San Francisco several days later, in the middle of the night, my wife awakened and said: "A man named Hickson, producer at the neighborhood Gateway Theatre, called up and said he is going to make an actor out of you. What does **that** mean?"

It meant I was offered the part. The evening of the tryout had been a nightmare to me, as it awakened dormant actor inhibitions and I had tried to forget the whole business. We talked it over pro and con until daylight. Myra (Marsh), my actress wife being a troupier in fact, and, having watched my antics for several years since our marriage, clinched the argument with the statement: "You've been acting all your life—you might as well be paid for it."

The play ran for about eight weeks. Joyce and Selznick, Ltd., of Hollywood, became agents for the picture rights. Many studio representatives saw the play—the Fox-Western Studio bought it and are making it into a series of "family problem" pictures concerning the Jones family.

While still playing, several agents and studio talent scouts encouraged me to try out for pictures. However, having lived on the side lines for fifteen years, I thought I was immune. At the time I was having too much fun demonstrating how convincing a father I could be—that is, in the play. Anyway, I gave an agency a thirty-day option on my services.

I was taken to all of the studios, but nothing happened. I waited another month—still nothing happened. In the meantime the "Bug" had bitten me and the game of it pulled hard at me. Said I to myself "I am not going to quit until I see myself in A PICTURE and decide for **myself** whether to continue trying."

Obviously I had to do something to compete with the influx of the New York actor horde. So the idea occurred to me to have A COMPLETE SET OF PHOTOGRAPHIC CHARACTER STUDIES MADE.

I searched ten days to find a photographer who

would co-operate with me and would give the time necessary to accomplish my purpose. Taking three character pictures in costume each week for six weeks did the trick and allowed plenty of time to think through and grow into each character. As a result, the showing of these studies got me my first "bits" and I now have finished parts in current pictures—"Captain Calamity," Hirlman Productions (M-G-M) and as Stevens in "The Singing Cowboy," Republic; as "Tex" the prospector, Johnnie Mack Brown Series, and as Will Bannister, hard-fisted business man, and I'm "set" in the part of doctor and up for other parts, all in four months.

My character studies, with linen backs and filed in sequence in an attractive looseleaf leather binder, continues to secure me parts, but with much less difficulty now, as I have picture stills also to present to casting directors.

I am told that the remarkable thing is that no one of the several casting directors who hired me had ever seen me on a foot of film. I attribute this to the quality of character studies I presented.

My father, the Rev. Samuel Van Pelt, retired Methodist preacher, considered it was stretching a point that my first part should be in a Tim McCoy Western production, where I sat smoking at a poker table in a saloon. But what do you expect from a preacher's kid?

In "The Singing Cowboy" I was shot through the lungs, dragged through burning straw in a burning barn and, when "dying" outside the barn, was permitted to fall from the arms of the "lead." All this happened, not once, but several times. It was inferred that if I lived through these "deaths," maybe I'd be given another part. My initiation was complete. It's as much fun as selling real estate—when it sells!

I'm trying out a new line on my family and livestock at home. "Don't act—just be natural—all right, try it again—what's the number—37 Sleepy Ears—quiet now! (Whistle)—close that door!—ROLL 'EM!—(Slap)—(Buzz)— * * * CUT, My * * d, all right, once more—**quiet—Camera!** * * * O. K. it's a take (relief). What a ham! Move up for a still, Rembrandt, make it snappy. Now, move over there for the next shot. 'In 1915 I played the part of When do we eat?'

Repeat the above until you are exhausted unto

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John Van Pelt—showing him in twelve characterizations of the kind that interested the casting director.—Stillman Studios, Hollywood.

giddiness. I guess this equals motion pictures in the rough. Such entertainment has strenuous and painful delivery. Methinks a strong constitution and ability to take it comes before talent . . . still, I like it and should I continue to advance in pictures, it will be largely due to the faith and encouragement given me by my wife.

Outside of the need for a livelihood, the thing that fascinates me most in my new endeavor is the possible opportunity of creating a wide range of striking and convincing characters.

Furthermore, I think my wife and I have solved the problem of the usual long and demoralizing waits between pictures, as we own and love two acres of rustically treated Hollywood hillside property. This gives us plenty to do, what with rock walls to build, the care of the garden, trees, chickens, pigeons, rabbits, two dogs, three milk goats, and the boy.

Tips to My Fellow Beginners

Unless to materially change the age of the actor, I believe that the less make-up used the better. Why fill the natural lines of the face with paste and expect true expression? On the other hand, a little cold cream applied, with no powder, assists in bringing out highlights and points up the natural expression. This assists in offsetting varying lighting if in an action scene.

In attempting a variety of character studies the

subject, if inexperienced in concentrating on the characteristic thought, must be quietly led by the photographer, through suggestion, into the character.

I wish to state that others can often visualize characters the actor can portray better than himself. This was my experience with Mr. Stillman of the Stillman Studios, Hollywood, which studios literally dug out of myself my best character portrayals. Mr. Stillman is one of a small group of Hollywood photographers not yet absorbed by the picture industry, yet whose close association with pictures permit them to know **what the casting director looks for in a photograph**—sharp and unretouched, preferably of a glossy finish, permitting the actual personality to reveal itself; in a word, **REALISM**. the same thing the motion picture camera searches out when the subject is not pose conscious.

Usually motion picture aspirants go broke before learning what is effective. Only one out of many will get good advice and if one does get it, his chance of recognizing it is just as slim. The "sucker list" is endless. Much feature acting material has come and gone by this route.

The casting director is looking for **personality**, an element usually hidden with the self-conscious, over-anxious beginner or "rusty" actor appearing in person. Therefore, surely **one** constructive approach is

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Science Steps Into Optics

By EARL THEISEN

PART II.

Associate Editor

International

Photographer

1767—George Adams introduced a smoked glass which was known then as "grey glass." It was used for lessening sun glare.

1767—James Short lectured on making a perfect spherical lens. The spherical lens is used mostly as an aid to the eye in improving the visual image definition. It gives an image wherein there is no curved distortion toward the outer edge of the image.

1772—Richard Watson, at Cambridge, noted the heat absorption qualities of colored glasses.

1774—Sir John Herschell made a telescope. He polished the speculum mirror of this telescope, which was large, by hand, using pitch; but he later devised a machine to do this polishing.^{27, 28}

1783—Addison Smith, on March 13, in England, was granted the first patent on a pair of spectacles with achromatic lenses.

1786-1826—Joseph Fraunhofer devised many improvements for the optical science. His contributions list a polishing device for large objectives; a furnace for making an improved flint glass. He also made a crown glass because of flaws in the other makes during his time. In 1815, he discovered in the spectrum, the bright lines which bear his name, and that each line was caused by some vaporized or gaseous element heated to incandescence.

1791—James Smithhurst's patent contains the first recorded mention of a concavo-convex and a plano-convex lens.

1802—Thomas Wedgewood used a lens in his photograph process.⁴⁸ This was the first time a lens was used in photography.²⁹

1805—Pierre Louis Guinaud, in Switzerland, made an improved optical glass.

1807—G. B. Amici, of Modena, Italy, is said to have designed the first prism. It had one plane and two lenticular surfaces.

1812—William Hyde Wollaston introduced the meniscus lens which was later used in the first photographic processes. It was a lens of a single piece of glass, concavo-convex in form, and was not chromatically correct.³⁰

1824—The first binoculars came into use at this time. They had no prismatic construction which gave a stereo perspective but consisted of a telescope for each eye made after the principle of the Gallilean Telescope.

1833—George W. Wells started in the optical business at this time, and in 1869, he formed the American Optical Company. This is the oldest optical company in America, and is one of the few in the United States who at this time make optical glass.³¹

1840—Joseph Petzval calculated a photographic

lens which was constructed by the Voigtlander Company. This was a portrait type lens and was the first serious attempt at making a photographic lens. It had a combination of two elements of crown and flint glass. The front combination consisted of a positive of crown and a negative of flint, while the rear element was of a convexo-concavo of flint and a double convex of crown glass. This lens was altered later by others, but the general principle retains some popularity today, particularly in the lenses used in the projection of motion pictures.

John William Draper is credited with using this lens in his studio, in which was taken the portrait that is said to be the first photograph of the human face. He used the Daguerrotype process.³²

1840—Andrew Ross made a photographic lens of "Triplet" construction for Fox-Talbot. It consisted of a concave dispersing lens of flint glass for a central unit, with a symmetrical construction on either side. It had a speed of F.4, and was the first of the Triplet Lenses that came into wide use recently.⁴⁹

1846—Carl Zeiss established the Carl Zeiss Company, and in 1866 Ernst Abbe became associated with the company. Otto Schott, in 1881, joined the Zeiss Works as a glass maker. Schott introduced the Jena glass in 1886.³⁴

1851—Ignace Porro, in Paris, is credited with the use of the Gallilean Telescope principle in a photographic telephoto lens. This was the first time a long focus lens was used in photography. Others to later perfect telephoto lenses were Deitzler, in 1856, who made a fixed focus telephoto; Ross, Limited, in 1912; and many others.³²

1853—John Bausch and Henry Lomb formed a partnership for the purpose of making and selling a horn rim spectacle. They sold their spectacles from door to door by soliciting. They later perfected a hard rubber frame. Bausch and Lomb made their first microscope in 1874.^{31, 33}

1857—Grubb patented an achromatic lens that consisted of two concavo-convex meniscus lenses in combination; the rear glass was of crown while the front was of flint. An achromatic lens is one that is corrected so all colors come to a focus in the same plane. The Grubb lens was well corrected spherically; which with its chromatic correction, caused it to be widely used for a time.

1860—Harrison and Schnitzer introduced the

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Shooting "ANGLES" ON LIGHT BULBS



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Every cinematographer knows that camera angles are important. But light bulb "angles" are important to you, too . . . especially the angles that tell whether a bulb is straight on its base.

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Fun With Microscope and Camera

By KARL A. BARLEBEN, JR., F.R.P.S.

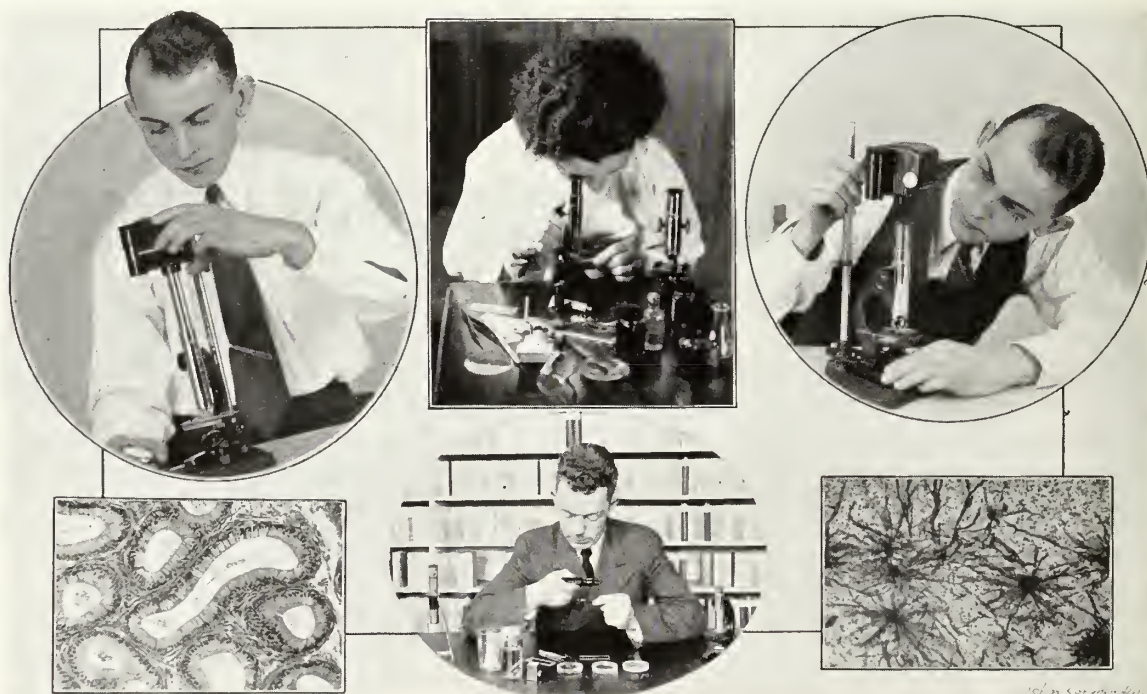
Dean: New York Institute of Photography

THERE was a time, not so long ago, when not many people owned a microscope, but thanks to the far-sightedness of several firms in offering inexpensive and practical microscopes, many are now to be found in homes all over the country. I do not refer to the toy outfits usually sold in department stores around Christmas time, but really efficient "scopes" which cost from \$15.00 to \$25.00. The cheaper toy outfits are impractical for serious amateur work, because their lenses are decidedly inferior and in general, they offer no inducement for the serious applications involved in photomicrography. The least expensive, practical and yet worthy microscopes include those offered by the Bausch & Lomb Optical and Wollensak companies.

The Bausch & Lomb Model R microscope is a representative example of the type which, in my estimation, meets all amateur requirements at least cost. It is folly to invest in instruments which cost

cost from \$120.00 and up. However, it serves the purpose nicely.

It is true, that most of the inexpensive microscopes fall into the hands of the boys and girls of high school age, yet you would be surprised at the number owned and used by grown-ups, for amateur experimenting and amusement. There is a vast army of individuals who are sufficiently interested in the "Invisible World" and who invest in a simple microscope to probe its wonders, but who do not feel justified in making an expenditure of one or more hundred dollars to satisfy their scientific curiosity. The simple "scopes" serve their purpose well, and as a result thousands are in use. Amateur microscopy is quite an important hobby in England, and in fact all over Europe, and it seems that it is only here in the United States that microscopy has made headway during the past few years. Today thousands own practical microscopes, and through the efforts of the Bausch & Lomb Optical Company,



Upper left and right—Exp. 12" on Eastman Pan, B Filter, Enlarged 3x on P. M. C. No. 1 contrast. Dr. Milton I. Schwalbe, New York City. Exp. 8" on Eastman Pan. B and G Filters. Enlarged 3x on P. M. C. No. 1 medium. Dr. Milton I. Schwalbe, New York City. Lower center—Dr. Julian D. Corrington, Ph.D., Microscopist, Ward's Natural Science Establishment, University of Rochester, Author "Adventures With the Microscope."

less than \$12.00 to \$15.00, because of their poor quality optics and inferior workmanship. The Model R, selling at \$21.00, is as practical a microscope for the money as I have ever seen. Naturally, this inexpensive microscope, while completely satisfactory and practical, is not as large nor elaborate as the larger and more expensive models which

hundreds of amateur microscope clubs have been formed in various parts of the country.

Aside from using the microscope for examining interesting microscopic objects, the camera owner will sooner or later get the idea of hooking his camera to it. Then the fun really begins, for be it known that photomicrography is no mean hobby,

and demands of its adherents a technique and patience not possessed by everyone. The rewards, however, fully justify any time and effort spent in the pursuit. With the idea of offering a few suggestions to those who wish to delve deeper into this fascinating subject, the following remarks are presented.

First of all, the microscope, in order to be successfully used with a camera, must have certain qualifications—but really not many. The simple “scopes,” such as have been previously mentioned, are perfectly suited for practically all the work the amateur photographer may care to do. So many people believe that high qualifications are important, and that a microscope is judged by how many diameters it will enlarge an object, that I feel it best to point out from the start that such is not the case. As a matter of fact, more can be seen—and photographed—at low magnifications than at high, and that the application of high power is extremely limited. The novice is, as a matter of fact, better off with a simple microscope which contains a good optical system consisting of a mirror, a good objective, and a good eye-piece. The more expensive models of the laboratory type include, among other things, a condenser, which to begin with, may offer more difficulty and complications than the beginner will care to bother with. Then too, the amateur models are small and compact so that they can be stowed away when not in use, without taking any space to speak of.

Aside from the microscope, some form of illumination will be required. Standard laboratory equipment calls for special tungsten or arc lamps of high power, but for home work, almost any tungsten mazda lamp will do nicely. The brilliant arc lamp is needed only when working at high magnifications or with live specimens, where the exposure has to be of very short duration. In the vast majority of cases, the amateur will content himself with inanimate specimens, hence a low-power mazda lamp will suffice.

In amateur photomicrography, the illumination of a tungsten 60-watt lamp will, in the majority of cases, be entirely satisfactory. The standard Photo-

Standard equipment for amateur research in photomicrography.



lood lamp may be preferred, where the heat dissipated by it is not objectionable. A regular adjustable desk or table lamp can be brought into service, the flexible “goose-neck” adjusting the light to just where it is wanted in front of the microscope mirror. If any amount of work is contemplated, a special microscope lamp can be purchased at a very reasonable cost. Thus we have solved the lighting problem without any undue expense or bother.

The next problem is the camera. Almost any camera can be made to serve the purpose. In fact, a simple camera might be said to be best, for it eliminates many of the complicated non-essentials. It may seem strange, but nevertheless true, that a simple box camera can be used for completely successful photomicrographs. A small camera is preferable, but here again, this makes very little difference except in the matter of convenience.

The problem which will most likely cause the most difficulty is the method of coupling the camera to the microscope. Two methods present themselves: (1) Using the camera lens as it is on the camera and (2) using the camera without its lens. When using the camera lens, the lens is set at infinity and suspended squarely over the microscope eye-piece. In cases where the camera lens can be removed, the eye of the microscope takes its place in the front of the camera, and the specimen is, of course, focused carefully on the ground glass focusing screen of the camera. As various cameras have to be handled differently, no definite rule can be set down here. With a little experimentation, the problem can be easily worked out to suit individual requirements. Off-hand, I would suggest, for simplicity and ease of operation, the use of one of the special outfits available, such as the Bausch & Lomb Amateur Photomicrograph Outfit, which is shown in the accompanying illustrations. With this camera stand and Model R microscope, a complete unit which requires no adjustment or fussing is available. The small, special box camera, to which is attached a focusing tube, is mounted so as to be adjustable upon the upright stand in the most convenient manner, and is adapted for use instantly with the Model R or Gem, or for that matter, any similar amateur microscope.

Regardless of what equipment is used, it becomes
(Turn to Page 28)

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THE CHROMATONE PROCESS

By ROWLAND S. POTTER,

*Defender Photo Supply Company, Inc.,
Rochester, N. Y.*



HERE are three basic methods of making pictures in color:

(1) We can illuminate a receptive surface with varying proportions of the three basic colors, one on top of the other, thus additively producing white or any intermediate color. This is known as **additive synthesis**.

(2) We can place on a receptive surface previously blended mixtures of color pigments in the proportions desired. This is the direct method and is almost universally used by the artist in oil colors.

(3) We can start with a white surface and obtain all our colors by taking away the components, one by one until, when all are taken away, we obtain black. This is known as **subtractive synthesis** and can be illustrated by placing a yellow transparent media over a white surface thus subtracting blue,—if a magenta layer is now overlaid we obtain white minus blue and minus green, which is obviously red. All possible colors can be reproduced by overlaying on a white surface the three complimentary or minus colors in varying proportions. Thus:

White overlaid with yellow and magenta gives red;

White overlaid with yellow and blue-green gives green;

White overlaid with magenta and blue-green gives blue;

And the overlaying of all three subtract every color from the original white surface, producing black.

The Chromatone Process belongs to Class 3, and involves no new processing methods. Each stage of the process can be described as photographic and covers methods of manipulating with which every photographer is familiar, such as developing, fixing, toning, washing, etc.

Preparation of Color Separation Negatives

It is first necessary to obtain photographic records of the original taken through the three basic tri-color filters. These negatives can be obtained by any one of the following methods:

(1) In any still-life subject, three successive photographs can be taken through the red, green and blue filters. (In practice the Wratten A, B, and C-5 filters are entirely satisfactory, using any good panchromatic plate or film.) It is desirable for reasons to be explained later that a neutral scale and a color identification chart be included in some corner of the original set-up.

(2) By the use of a sliding back in an ordinary view camera, the color sensitive plate or material is placed in a long light-tight holder close in front of which are the three-color filters, both plate or film and filters are slid back of the camera so that three separate exposures through the appropriate filters can be made in very rapid succession.

(3) By means of mirrors or prisms the beam of

light from the lens can be split up so that three separate and similar images are formed in three different places—with the correct light filters in front of each. Simultaneous exposures are made for the blue, green, and red records, thus making portraiture and instantaneous color photography a practical possibility. (Owing to the great accuracy required these cameras are very expensive.)

(4) It is possible to make three-color separation negatives from such screen plates or films as Lumiere, Dufay and Finlay.

Having obtained three separate negatives, the first step in making Chromatone prints is to make black and white prints on Chromatone print paper. This is a collodion stripping paper. Chromatone print paper is exposed, developed and fixed in the same way as any projection paper such as Velour Black; in fact, this is the emulsion used. Prints can be made by enlargement or contact. During the fixation or shortly afterwards in the wash water, it will be found that the strip-film will easily separate from the paper base and can be handled subsequently without the paper backing. The strip-film consists of a thin layer of collodion on top of which is the usual gelatin layer containing the black and white silver positive picture. This film is strong enough to be handled, without damage, through the subsequent manipulation and when dry it forms a film only one-thousandth of an inch thick.

Consideration of the theory and practical illustration will indicate that the whites and varying proportions of white in each positive is a record of the quantity of primary red, green, or blue in each picture. The blacks or shadows in these prints are obviously a record of the absence of the particular primary and hence must be converted or toned to a color and depth of color recording the varying proportions of lack of this color; that is, to the complimentary or minus color to which we have already referred.

Toning the Strip-Film Prints

The next stage, after adequately washing the Chromatone strip-film prints, is to tone them by means of the special toning solutions to the complimentary colors of the taking filters. The toning proceeds in two stages. In the first solution or "A" toner, the images are bleached by the well known ferrocyanide reactions to a combined ferrocyanide of silver and another metal; after adequate washing of the prints are immersed in the second or "B" toning solution which changes the bleached image to the desired complimentary color.

The prints from both the green and red filters are bleached for about ten minutes in the special bleach bath-red-blue toner "A" and after washing transferred to the second or "B" toning solutions for the desired color, which rapidly changes the bleached images to magenta and blue-green colors, respectively. A treatment with hypo solution clears out the residual salts, leaving a transparent color

behind which only needs washing to give a permanent image.

The print from the blue filter negative is also bleached in another special bleach bath, yellow toner "A," and is toned yellow with the special yellow toner "B," and then fixed and washed.

Assembling the Color Print

The finished print is now ready to be assembled and it is astonishing how easy and simple the final assembly and registration really is.

On a piece of Masonite board or other smooth waterproof material, larger than the print, is first laid down on a piece of gelatin coated backing paper, previously soaked in water.

The yellow toned print is first laid face down on this paper and squeegeed in contact by means of a flat squeegee—allowing about one minute to elapse (to avoid slipperiness of surface); the print toned magenta is laid on top, slightly squeegeed and

(Turn to Page 21)

Metro-Goldwyn-Mayer Traveling Studio

Members of I. A. T. S. E. and M. P. M. O. everywhere, will recognize this magnificent overcoat of Gorgonzola fur.

Note the grace with which our hero wears it.

Seen rambling through the hills, in the big cities, in small towns where theatres are few, in fact, everywhere, is that Metro-Goldwyn-Mayer Traveling Studio. It consists of a fully equipped sound truck with troupe, comprising director, cameraman and sound man. The purpose of this innovation is to afford tryouts to thousands of girls who patiently await opportunity to appear on the screen.

Charles David, long time member and former president of Local 666, Chicago, is the cameraman in charge of this travelling studio, to whom the girls turn, as in his hands are the destinies of those who believe that they can make good.

Mr. David has covered over 100,000 miles in the three years that he has been devoting his time to this search for beauty and talent. Endless reels of film have passed through his camera and over 7,000 tests have actually been made. One of David's strange adventures was to come to Hollywood and ask Herbert Aller, Business Representative of Local 659, to act as a judge in selecting the girl most

qualified of a number that appeared on the stage in the Garfield Theatre, Alhambra.

Aller's selection was Miss Beverly Arnett and this young lady is now the happy "party of the second part" in a three month's contract with Metro-Goldwyn-Mayer Studios.

Charlie, as Mr. David's fellow cameramen call him, will soon leave for England where he is to continue in the same capacity. Those who are familiar with his work and his personality are confident that it won't be long before he will have an international reputation for the excellency of his photography.

Charles
David



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PHOTOGRAPHY

"It Included the Use of a Tool Relatively New to Construction and Engineering Practice—That Tool Was Photography."

(Written Exclusively for the International Photographer)

WHEN officials of The Metropolitan Water District of Southern California set about the tremendous task of building the world's largest aqueduct, they determined upon the policy of using the most modern of engineering and construction methods.

That policy embraced more than simply the use of up-to-date mucking machines, drills and shovels. It included the use of a tool relatively new to construction and engineering practice. That tool was photography.

The Metropolitan Water District Aqueduct, now under construction, will carry a billion gallons of water a day all the way from the Colorado River, on the eastern boundary of California, to Los Angeles and other cities and highly developed areas in Southern California which comprise the district. This giant water supply system includes 390 miles of tunnels, canals, conduits and reservoirs. It is the largest water supply system ever to be constructed. It is being built to provide an everlasting protection against drouth for Southern California's cities in the Metropolitan Water District.

The Metropolitan Aqueduct is by no means the first great project on which pictures have been taken, but it is thought to be the first on which photography has been used so extensively and effectively.

Primarily, the purpose of the district's photographic department has been to aid the engineers and construction superintendents in their day-by-day work. Photographs of work on the huge job have saved thousands of miles of traveling on the part of executives who otherwise would have had to visit the work personally before a decision could be made.

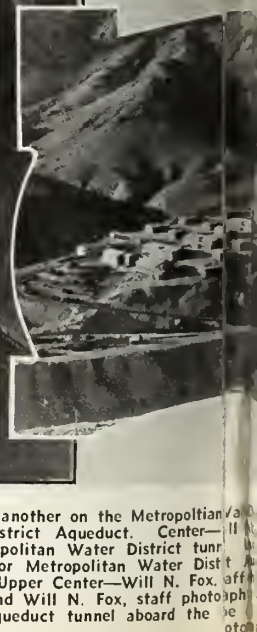
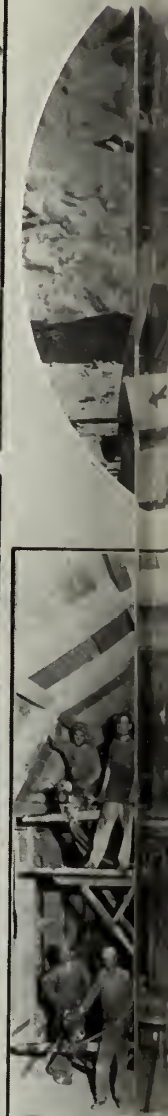
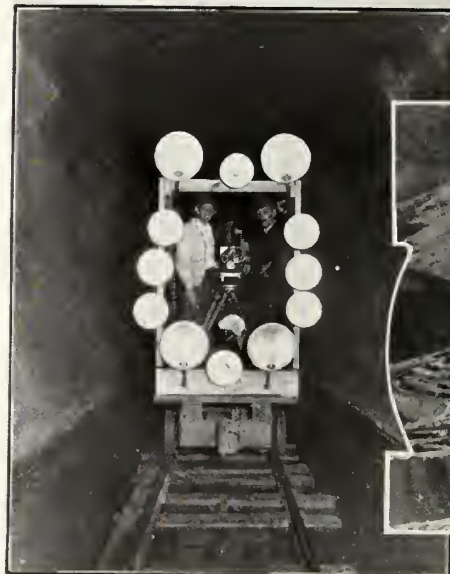
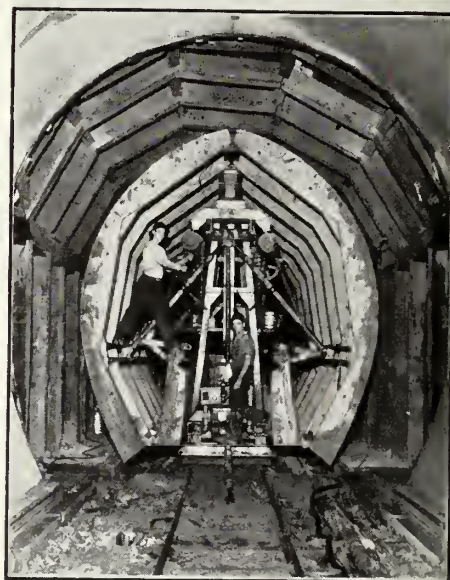
The work of the project's photographic department also has been valuable to the district as an aid in acquainting the public with progress on the aqueduct. Prints of still photographs are made available to newspapers and magazines, and motion pictures of the job have been given extensive distribution in theatres and before such groups as service clubs, churches, and schools.

Last but not least, the district has kept in mind in its photographic activity the fact that a complete picture record of the project would be of great value as an historical record of a great engineering work which is bringing a new and abundant water supply to a semi-desert country.

In looking about for a man to take charge of its extensive photographic activity, the district realized that it must find an individual with a well rounded experience in the business, not only from the operating end but also from the standpoint of laboratory background.

The man chosen to fill the post was Will N. Fox, a veteran of the photographic industry in Southern California.

Starting from scratch when the project was launched in 1932, Fox designed and supervised the



Lower Right—Looking from one tunnel into another on the Metropolitan Water District Aqueduct. Center—Placing concrete lining in a Metropolitan Water District tunnel using special camera car designed for Metropolitan Water District. Right—Alfred D. Brick of Fox Movietone and Will N. Fox, staff photographer, emerging from an aqueduct tunnel aboard the camera car.

The Metropolitan Water District of Southern California Finds a New Aid in Construction

By ROBERT SPEERS

construction of a complete photographic laboratory to meet the unusual conditions of the job on which, for several months of the year, extreme heat prevails.

Since 1932, Fox has made more than 10,000 still pictures and approximately 200,000 feet of 35 millimeter sound on film motion picture negative on the 390-mile aqueduct line.

This large output has been accomplished in spite of a wide variety of unusual conditions. First, there has been the physical size of the aqueduct job which is illustrated by the fact that Fox has traveled more than 150,000 miles in the course of turning out the work mentioned above.

Climatic conditions have constituted a definite problem. Extreme heat, coupled with frequent dust and sand storms have required a specially built photographic car and dust-proof cases for all equipment. In the laboratory, special refrigerating apparatus had to be installed to maintain an even temperature for processing.

As far as light has been concerned, it has been both feast and famine on the aqueduct. As is well known, the desert country normally presents an abundance of light. But in the deep recesses of the 108 miles of aqueduct tunnels, an entirely different situation prevails. It was necessary to exercise considerable ingenuity to provide sufficient light in the perpetual gloom underground, especially for taking motion pictures.

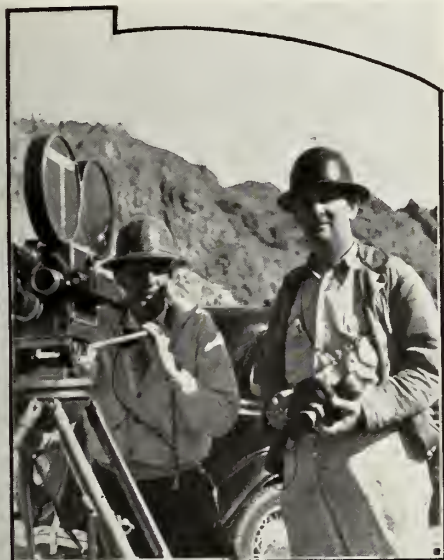
Another major problem in taking pictures underground lay in the limited space available and the heavy traffic in the bores, which were excavated 18 feet in diameter. In the dry tunnels, dust is a problem. In the wet tunnels, water and fog present difficulties to the photographer.

The recording of sound in the tunnels, of course, presented a multiplicity of problems

To meet these varied conditions, it has been necessary for Fox to design and build a number of unusual pieces of photographic equipment.

For example, to obtain proper lighting in the tunnels, use was made of the storage battery locomotives which haul the muck trains in and out of the bores. The voltage of the batteries which power these locomotives is approximately 115 volts, and they are large enough to stand a drain of 400 amperes. A special connection was designed which made it possible to hook on to any of the locomotives. A special camera car, with a framework supporting reflectors and lights, was built so that it could be attached to the front end of a locomotive. Thus it was possible to provide ample light at any point in the tunnel, or to successfully make push shots.

(Turn to Page 22)



ric Aqueduct. Bottom Center—Berdo Camp in the Little San Ber-
us in tunnels of the Metropolitan Water District Aqueduct. Left
Le—Fox Movietone crew (Alfred D. Brick, left, and Herbert Tice,
ct inns. Upper Left—Fox Movietone crew on Aqueduct—Herbert
gr, The Metropolitan Water District of Southern California. Upper
re Metropolitan Water District. Right Center—Herbert Tice and Alfred D.
ag battery locomotive which furnishes power for lights used in tunnel

AMATEUR MOTION PICTURE SECTION

HAMILTON RIDDEL, EDITOR



The 1936 National Conference On Visual Education

By F. HAMILTON RIDDEL

BEFORE a large gathering of its membership, the 1936 National Conference on Visual Education, sponsored by the De Vry Foundation, was held the latter part of June at the Francis W. Parker School in Chicago.

This sixth annual assembly of the Conference, formerly known as the De Vry Summer School of Visual Education, was enthusiastically attended throughout the four days of the sessions by prominent educators and representative advertising executives. Leading business firms and educational centers submitted films, representative of each field, which were shown daily at the Conference.

For the convenience of assembled members and guests, a separate hall was available in which was displayed the complete line of motion picture products of the De Vry Corporation. Here, one could examine at his leisure the sound and silent, 35 mm. and 16 mm., theatrical, non-theatrical and portable projectors and cameras and special equipment made by this well-known company. An especial treat for visiting members during the sessions this year was the 16 mm. sound-on-film recordings which were made of each and every guest attending the Conference.

Speaking in the auditorium of the Parker School, which was completely equipped for the occasion of the Conference with both 35 mm. and 16 mm. De Vry sound projectors, slide machines and public address system, Herman A. De Vry, president of the corporation and founder of the Conference, opened this year's sessions with a few words of welcome. The four-day program was conducted by A. P. Hollis, Educational Director, who is well-known in the visual education field.

Selected industrial and educational motion pictures, 35 mm. and 16 mm., examples of best current practice, were shown daily, a majority of the films this year being sound-on-film. Film rating cards were distributed to each member and after the running of each film, members were asked to grade the film as Excellent, Good, Fair or Doubtful. With the termination of the Conference, an honor list of non-theatrical films was announced, in the order of preference, constituting a valuable guide to industrial and educational film producers. From such guidance should come constantly improved films.

Between the many film exhibitions, a portion of

each day's session was given over to current developments in visual education by its leading exponents. Verbal presentations and discussions outlined events of note which had transpired during the past year, and in many cases speakers accompanied their remarks with special films illustrative of their respective topics. From such periods of discussion, which were participated in by pertinent remarks and questions from the audience, a consensus opinion of value to all present was obtained.

During the second day's meeting, Rupert Peters, director of the public school system of Kansas City, Missouri, spoke on that city's department of visual education. He stated that his department buys most film subjects outright, rather than by renting them. Purchased subjects do not lose their appeal, as a new class of pupils view the films each year. In the case of silents where titles are particularly facetious, Kansas City replaces them with more instructional ones, written by teachers and produced by the cinematographic department of their trade school. Results of visual education in the Missouri city, according to Mr. Peters, are best when the films are shown to single classes in respective classrooms; more films are shown in the elementary grades than high school; and teachers must be well-versed in the proper use of visual education.

J. E. Hansen, Director of the Department of Visual Instruction at the University of Wisconsin, traced the founding and growth of film instruction at Madison. Organized twenty years ago, the department has attained an important position in Wisconsin. In recent years film distribution has greatly superseded lantern slides at Madison, and for the current season about 20,000 reels have been booked for showings. Two schools in Milwaukee, for example, have placed orders two years in advance. Mr. Hansen voiced a plea for producers to really offer something in sound. He believes the future of visual education is very great and that so far the surface has only been scratched.

Another speaker was W. J. Hamilton, Superintendent of Oak Park (Illinois) Schools, who reported a survey he had made in the Central States on visual education. He finds that although practically all schools of these States use visual instruction, too often it is treated as a side-issue. As a result of his survey, Mr. Hamilton feels there is room for improved technique in visual education and advises that necessary effort be put forth in it. In his opinion, films should be used exclusively for education and

(Turn to Page 29)

CINEMA-TIDINGS

Amateur Motion Picture News
Films, Inc.

FORMERLY known as Home Film Libraries in the silent days of 16 mm., the organization of Film, Inc., now offer 16 mm. talkie subjects for rental from the studios of Universal, Paramount, Gaumont-British and many independent producers. Full length feature pictures, combined with selected short subjects, forming programs one and a quarter to two hours, are rented as unit programs. Single talkie subjects are also available. Prominent stars as George Arliss, Jack Benny, Ricardo Cortez, James Gleason, Edward Everett Horton, Herbert Marshall, Chester Morris, Edna May Oliver, ZaSu Pitts, Ginger Rogers, and Henry Wilcoxon are featured in the programs. An attractive catalog describes Films, Inc., offerings in the 16 mm. sound library field.

B. & H. Catalog

Bell & Howell Company announces a new edition of its catalog of Sources of 16 mm. Films on Geography, Travel and Natural Resources. It is stated the purpose of the catalog is to indicate as completely as possible the films available in this field and where they may be obtained by free loan, purchase or rental.

Especially noteworthy is the large number of sound films listed—87 in all. Among them are several of feature length, such as "Thunder Over Mexico," "Isle of Peril" (life of the Faroe Islands), "Matto Grosso" (River of Doubt country in South America), "N'Mango" (British Cameroons), "Trekking to Timbuctoo," and "This Is America."

Also listed are timely sound film shorts, such as "Ethiopia" and "The Winter Olympic Games in Germany," several sound films on travel in Germany, three on coal mining, as well as a number on tractors and oil.

The National Park Service now has a full dozen films on National Parks, CCC and ECW work.

Among new silent films is a fine listing of hunting and fishing subjects available through Field & Stream Magazine and the South Bend Bait Company. There are, too, films available on the construction of Boulder Dam.

A Kodachrome natural color silent film on Bermuda is listed as available from the Cunard White Star, Limited.

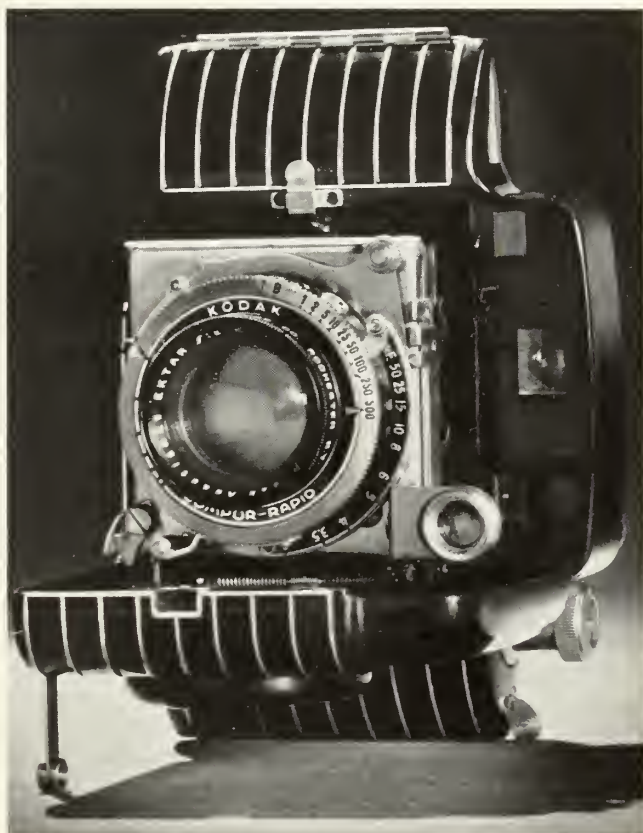
The catalog may be obtained from Films Division, Bell & Howell Co., 1801 Larchmont Ave., Chicago, by sending 25 cents in stamps to help defray the cost of preparation and mailing.

De Vry Booklet

The firm of Herman A. De Vry, Inc., 1111 Center Street, Chicago, has issued an interesting booklet, entitled "The Bangs No-Home-Work Plan," which gives a clear account of the De Vry Sound Projecting unit, that can also be used for a public address system, as installed in the Bangs (Texas) public schools.

Describing how the plan works and how visual instruction aids, the booklet states: "Bangs schools have used the no-required-home-work plan for two years and the results are highly satisfactory. In this plan the teacher's two greatest duties to her pupils are to inspire them to desire to learn and to

guide and direct them in their learning. Her chief objective in introducing a unit of study, then, is to create interest in the unit and to arouse the curiosity of the students to such an extent that they become eager to start work on the unit. The teachers of



Bangs are convinced through actual experience and observation that there is no greater aid for giving pupils a genuine inspiration and for arousing their intense interest in the study of a unit than that of visual instruction."

Much specific and definite information is included on how Bangs uses 16 mm. sound for this work. Educators will find the De Vry booklet especially interesting and informative.

New Eastman Camera

The Kodak Bantam Special, featuring a built-in range-finder synchronized with focusing mount and new Ektar F.2 lens, has just been announced by Eastman Kodak Company. It is particularly designed for the advanced worker who desires a camera capable of taking fine pictures under adverse conditions.

Smartly-styled, with die-cast and machined aluminum case, the Kodak Bantam Special has been carefully shaped for maximum convenience in the hand. Its lustrous black enamel finish presents a pleasing contrast to the raised aluminum ribbing of the case. When closed, the case provides complete protection for lens, shutter and front elements of the view-finder and range-finder.

The built-in range-finder is of the split-field, mili-
(Turn to Page 31)

MOTION PICTURE SOUND RECORDING

(Continued from Page 7)

the cathode bias resistor **BR** is shunted by the grid by-pass condenser and the grid return of this second stage connected directly to the ground point without the 100,000-ohm resistor **FR**.

For the reason mentioned above, no grid filter is required in the final stage; there being no higher level point in the amplifier from which energy may be fed back to this grid circuit. The grid bias resistor (**BR**) for this stage and its by-pass condenser are incorporated with the power supply, as may be seen in Figure 1. This helps to simplify the amplifier.

Plate Filtering

It will be noted that parallel feed is used in the plate circuit of the first amplifier tube. This is done, as was explained in a previous chapter of this series, to avoid any possibility of magnetic saturation of the coupling transformer core by the flow of an excessive current through the transformer primary winding. In addition to this parallel feed circuit, a condenser marked **CP** and a resistor, **PR**, are incorporated in this plate circuit. These constitute a form of plate circuit filter.

Plate circuit filtering is employed for the same reason as grid filtering: to prevent oscillation through the feed back of energy from higher level stages due to common coupling in the power supply. The principal purpose of the resistor **PR** is to provide a voltage drop (**IR** drop) so that the d-c. plate voltage applied to the first amplifier tube will not be as great as the plate voltage applied to the tubes in the second stage of amplification; but in connection with the condenser this resistor serves also as a plate circuit filter.

Functioning of the Plate Filter

The plate filter used in the second stage is more true to type, and for that reason will bear description. It is formed of the by-pass condenser **CP** and the reactance, or choke coil, **PC**. Since the d-c. ohmic

resistance of the choke coil **PC** is low, it offers almost no opposition to the passage of the direct plate current; but its impedance to an alternating current, such as would be transmitted back from the final amplifier stage in the form of feed-back energy, is very high, and the voltage drop in the choke coil would be so great as to prevent any of that feed-back energy reaching the plate of the tube.

The by-pass condenser **CP** serves to provide a low impedance path for the signal current in the plate circuit from the tube plate, through the transformer primary and the by-pass condenser **CP** to the cathode of the tube. This prevents any loss of the signal voltage by keeping it from entering the power supply. This combination of condenser and choke coil also forms a filter that tends to smooth out any fluctuations in the plate supply current that may have got by the regular filter in the power supply. This is the reason for the plate filter in the final amplifier stage.

This combination of inductance and capacity in the plate filter forms what is known as a low-pass wave filter. Such a filter derives its name from the fact that it passes all frequencies below a certain "cut-off" value, and attenuates, or practically prevents the passage, of all frequencies above that cut-off value. The plate filter described for this amplifier cuts off well below the audio-frequency range (20 to 20,000 cycles per second); so it does not hinder the passage of direct current, which is considered to be a current of zero frequency, to any appreciable extent.

In the next, and final, chapter on this subject of the basic amplifier, we will discuss cathode biasing, the power supply for the amplifier, and the design of a high-power output or bridging amplifier that will greatly increase the effective power output of this amplifier and permit it to be used in a large public address system or radiotelephone transmitter.

NEWSREEL COVERING AT THE G. O. P. CONVENTION CLEVELAND, OHIO, JUNE 1936

A week before the Elephants started trumpeting the opening of the great Republican show that is held every four years, the button pushers and noise catchers of the world's greatest Procurers of Ballyhoo started arriving in Cleveland.

Teddy Rickman and Irving Korenman were the first to arrive after making a side trip to the Windy City of Chicago from the 500 mile auto race at Indianapolis—The Red Head (Felbinger), from Chicago, was the next to arrive as he had to appear on the CBS broadcast on Saturday before the grand opening. This was the Red Head's first appearance before a Mike—that is a radio mike on a national hook-up—and to nip the St. Vitus dance he consumed a box of aspirin and at that he forgot all about the speech he had made up to tell about the many fire, police and sheriff badges that I have in my collection.

The Columbia Broadcasting System on Saturday, June 6th interviewed members of the newsreel staffs on a nation wide hook up regarding the newsreel coverage to be made of the convention.

Bob Trout chief announcer did the honors interviewing the following button pushers—Gene Boyd of Hearst Metrotone, Arthur DeTetta of Movietone, Anthony Caputo of Pathe, Fred Felbinger and myself of Paramount. Universal missed out as none of their crank turners arrived in Cleveland in time. I think

now would be a good time to list the various crews starting with Paramount who had the largest number covering.

PARAMOUNT NEWS: Wm. P. Montague, Assignment Editor, in charge; Robert Denton, Special Washington representative, Local 644; Wm. A. Macdonald, Assistant Make-up Editor; Clyde Somers, Paramount News laboratory superintendent; Nat Wolensky, Contact man.

Fred Felbinger,	Local 666	Camera
Robbie Robinson,	Local 476	Sound
Lou Hutt,	Local 644	Camera
George Westbrook,	Local 52	Sound
Douglas Dupont,	Local 644	Camera
E. Warren Wood,	Local 52	Sound
James Buchanan,	Local 666	Camera
Harold Flood,	Local 52	Sound
John L. Hermann,	Local 644	Camera
Walter Swenson,	Local 52	Sound
L. Mingalone,	Local 644	Camera

HEARST METROTONE, with Gene Boyd contact man in charge had three sound crews.

Jack Whipple,	Local 644	Camera
James McKean,	Local 52	Sound
Teddy Rickman,	Local 644	Camera
Irving Korenman,	Local 52	Sound
Fred Fordham,	Local 666	Camera

Oscar Ryan, Local 476 Sound
Harry Boilerman, Assistant

FOX MOVIE TONE had two sound crews with Arthur De Titta, Local 644, special Washington representative in charge.

Al Gold, Local 644 Camera
Ad Tice, Local 52 Sound
Emile Montemurro, Local 666 Camera
Jack Dunn, Local 476 Sound

PATHE with editor Jack Connolly in charge, covered with two sound crews.

Lawrence O'Reilly, Local 644 Camera
Gustave Kraemer, Local 52 Sound
Anthony Caputo, Local 666 Camera
Ralph Saunders, Local 476 Sound

UNIVERSAL covered with one sound crew and three silent cameramen.

James Lyons, Local 644 Cameraman in charge
George Graham, Local 52 Sound
Irving Smith, Local 644 Camera
Floyd Traynham, Local 666 Camera
James Sedivy, Local 666 Camera

The Republican committee on arrangements did themselves proud in taking care of the newsreels.

In the basement they constructed five rooms, one for each company, to be used as a combination office and darkroom. These rooms were ten by ten feet, with a dark room five by ten feet. They were equipped with benches, a table for a typewriter and a phone.

Signs were placed over each door with the name of the newsreel it was assigned to. In the basement also was the newsreel studio equipped with lights to be used for sound interviews. Besides the newsreels the basement was also used by the wire services, still photo services and rooms for the various newspapers that covered.

The Associated Press also set up their portable wirephoto sending machine. In the auditorium of the Public Hall it took nine days and nights to prepare it for the convention. The speakers platform was extended about a hundred feet out from the center of the stage six feet above the floor.

On each side of the speaker's stand was the press section. Back of the speakers stand on each side of the proscenium arch, the broadcasting companies built their control rooms from which they could look

(Turn to Page 30)

CHROMATONE PROCESS

(Continued from Page 15)

pushed into register, where it is firmly squeegeed down. Viewing the assembly through a blue filter like a Wratten C-5 will make this a little easier.

We are now ready to add the blue toned print which we do in an exactly similar manner and it is seen how the picture "jumps into color." The blue image is very easy to register.

If at this stage we find the picture out of color balance, it is well to refer to the appearance of the neutral scale which, as we have previously mentioned, should be included in every picture (at least until considerable experience has been gained), the three images can be separated and one or other replaced by a darker or lighter print in order to obtain a more satisfactory balance.

When all have been registered a narrow piece of Kraft gummed paper is used to fasten down the print on all four edges to the Masonite board, overlapping the prints about one-quarter inch on the edge. As the print dries, the collodion contracts slightly and when dry a very smooth finished print is obtained. It is interesting to note that whereas the three components can be separated when wet, after drying, without the use of any adhesive, they stick so tightly that it is impossible to again separate them.

The print can now be bound with gummed tape in the regular way. Why dry and stripped from

the supporting board, any slight tendency to curl can be remedied by rolling the print over a straight edge in the conventional manner, but prints must not be too dry, if cracking is to be avoided.

The print can now be trimmed to size. The backing board can be cleaned by soaking it for a short time in warm water, when the adhering gummed tape can be easily removed. The board is then ready for use again.

Chromatone prints, ordinarily processed, dry with a high gloss and great color brilliancy, which is considered desirable for illustrative and commercial work.

Matt surface finishes may be obtained by special treatment.

THE PHOTOGRAPHIC SOCIETY OF AMERICA

The Photographic Society of America One Hundred Print Salon. Last day for receiving prints October 1, 1936. Limit four prints. Entry fee \$1.00. Open to all photographers (professional and amateur) of the United States, Canada and Mexico and all members of the Society regardless of residence. Selected prints to be exhibited in the United States and Canada during 1937. Mail entry forms and prints to Dever Timmons, A.R.P.S. Salon Secretary, Box 216, Coshocton, Ohio.



MAX FACTOR'S
NEW
Satin Smooth
LIQUID FOUNDATION
A REVELATION IN FACIAL MAKE-UP

"PHOTOGRAPHY—A TOOL RELATIVELY NEW"

(Continued from Page 17)

In the wet tunnels, with large quantities of water falling from the roof, it was necessary to design special water-proof reflectors with pyrex glass lenses to protect the hot photofloods from the falling water. In addition, conditions in the wet tunnels required special covers for the cameras and amplifier so they could be kept free from moisture.

Since practically every known record for construction speed has been broken by the aqueduct crews, not the least of the photographer's problems was that of snatching his pictures without unduly interfering with the work. The characteristics of a diplomat often had to be combined with those of a cameraman in order to convince some zealous superintendent that the camera had as much business on his job as did the mucking machines and drills.

All still pictures of the job taken for record or progress purposes, were made on 4x5 film. Contact prints were used in engineering reports. Eight by ten, 11x14, and 30x40 projection prints were made for display and publicity purposes.

The still equipment consists of a 4x5 Agfa Ansco view camera, equipped with a Carl Zeiss 16.5 centimeter f:4.5 lens in compur shutter; one 5x7 Agfa Ansco view camera with a 4x5 reducing back and 15 centimeter Goerz Dagor f:6.8 lens in compur shutter; one 8x10 Agfa Ansco view camera with 12-inch Goerz Dagor f:6.8 lens in compur shutter; one 10-inch Folmer & Swing circuit camera with Turner Reich convertible protar; one No. 6 Folmar & Swing circuit camera; one 4x5 revolving back Graflex with a 16.5 centimeter Carl Zeiss f:4.5 lens; one 4x5 press Graphic with a 17 centimeter Carl Zeiss f:4.5 lens.

The motion picture equipment consists of a Fox Case Movietone single system, variable density sound on film camera which was built by Wahl from a Bell and Howell camera. The lens complement includes all Cook speed panchro lenses as follows: 24 millimeter, 40 millimeter, 50 millimeter, 75 millimeter, and 8 and 12-inch telephotos.

This particular camera has an interesting history, in that it was the first Fox Case Movietone built and used by Fox Movietone back in the days when sound was in its swaddling clothes. Though newer models may have snappier paint jobs and carry more gadgets, this old No. 1 Fox Case job can hold its own with any of the best or latest, under the above mentioned extreme conditions. Despite its years of service, recent tests on an unmodulated

track demonstrated that the camera still is as steady as the proverbial Rock of Gibraltar. Will Fox, who has lugged it over many a hundred miles, reports that it also is just about as heavy as that famous rock, which is one point of advantage the newer models have over it. In addition, a 35 millimeter De Vry hand camera equipped with Leica interchangeable 35 and 50 millimeter lenses.

Although all of the district's motion pictures are on 35 millimeter negative, it was decided to make projection prints on 16 millimeter. The principal reason for this decision was the portability of 16 millimeter sound projection equipment. This portability, coupled with the great strides which have been made in the perfection of 16 millimeter sound on projection, makes this set-up ideal for the purposes of the Metropolitan Water District.

Because of the unusual working conditions along the aqueduct, it was felt that better results could be obtained by taking the picture and sound with 35 millimeter equipment, and then making 16 millimeter reduction prints.

The technique is as follows: Thirty-five millimeter single system picture and sound negative—35 millimeter picture work print—35 millimeter sound track work print—picture print and sound print cut to continuity—sound print re-recorded to 16 millimeter sound track negative—35 millimeter picture negative cut to work print—16 millimeter reduction print made from 35 millimeter picture negative—16 millimeter re-recorded sound track printed by contact on 16 millimeter reduction print.

This procedure results in a complete 35 millimeter picture negative and a complete 16 millimeter re-recorded sound print from which subsequent 16 millimeter prints are made.

An alternative considered was the making of a 16 millimeter sound track by optical reduction rather than re-recording, but the latter procedure as handled by a Hollywood laboratory was found to be entirely satisfactory.

Prints also were made on 35 millimeter negative and shown in approximately 200 theatres throughout Southern California.

The huge size and spectacular nature of the giant aqueduct have from time to time attracted newsreel crews from all of the major companies. The use of all of the district's equipment has been made available to these visitors.

TECHNICIAN ZECH RETURNS

Harry Zech, accompanied by his wife, has returned from a year's sojourn in England where, for ten months, Mr. Zech acted as chief technician to the Alexander Korda unit, in the production of H. G. Wells' "Things to Come."

Mr. Zech also officiated in technical matters on Thornton Freeland's "Sky Larks," with De Limur on International Players' Production, Ltd., "Important Romance"; with Manning Hayes on "Tomorrow We Live" and other important productions.

Mr. Zech has renewed old connections in Hollywood and expects to remain under the Stars and Stripes.

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produce Moonlight and Night Effects in Daytime-Fog Scenes-Diffused Focus and many other effects With any Camera - In any Climate
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HOLLYWOOD STUDIOS USE THEM IN EVERY PRODUCTION

A New Convenient Viscose Brush

By KARL A. BARLEBEN, JR., F.R.P.S.



NOT so long ago the new style Viscose Brush was announced (see page 14, May, 1936, issue of THE INTERNATIONAL PHOTOGRAPHER). This improvement was hailed as a most useful one, and now along comes still another improvement in this most practical of photographic accessories. The Willoughby Camera Stores, Inc., 110 West 32nd Street, New York City, is now proudly displaying the new double Viscose Brush, a metal frame at one end of which are fastened two Viscose Brushes so that the film may be wiped on both sides simultaneously. The metal handle makes a convenient holder and at the same time regulates the pressure applied to both sides of the film as the two brushes are moved along the film strip.

This new Viscose product—which costs \$2.50 and may be obtained from all local photographic supply stores or from Willoughby's direct—is of great value to not only all amateur photographers but com-

mercial finishers as well. In the case of the latter, where hundreds of film strips are to be dried rapidly and uniformly, the new Viscose product will be a boon in saving time and effort, combining as it does two brushes which complete the operation of wiping the film on both sides in one operation.

Should the Viscose Brushes wear down (I haven't as yet been able to wear them out) it becomes a simple matter to replace them on the metal holder by removing two screws which fasten each brush to the metal holder.

Viscose products are now available in various sizes and styles to accommodate any kind of photographic work. There are sponges, brushes and the new double brush units. The latter accommodate the 1x3 brushes; the entire units, including the metal holders, are 9½ inches long.

Be sure to see the Viscose products at your dealer or write for folder.

HOLLYWOOD WELCOMES THE FAZALBHOYS

Mr. Y. A. Fazalbhoy, of the great firm Fazalbhoy & Sons, Bombay, India, made a short visit to Hollywood during July. He was accompanied by Mrs. Fazalbhoy.

Mr. Fazalbhoy, among other things, is director of the Bombay Radio Company, established in 1926. Mr. Fazalbhoy tells us that since the inauguration of the Delhi Broadcasting Station and the announcement by the government of India that the Indian States Broadcasting Service will be completely reorganized and that the present ten-year-old Bombay and Calcutta stations will be replaced with higher powered stations. A new broadcasting transmitter will be installed at Madras. In all, there has been very keen development of the radio business in India.

The purpose of Mr. Fazalbhoy's visit is to strengthen relations with manufacturers for which his company is distributor and to discuss with them the different types of equipment so they may have the latest and newest in India.

It seems that not only is the Government of India developing broadcasting, but there are rumors that Nizam's Dominions and the Government of Mysore are going ahead with similar work.

The Sound Equipment Company, Ltd., is also one of the Fazalbhoy interests. This branch deals in reproducing equipment and photographic and lighting equipment for studios and theatres. This company handles RCA Photophone and Simplex Projectors and have equipped over a hundred studios in India during the past two years.

In the cinema industry, the Bombay Radio Company is also much interested. They being agents for Mitchell cameras, Bell & Howell printers, Jenkins & Adair Recording Equipment, Mole-Richardson Studio Lights, etc. This company is introducing the 16 and 8 mm. cameras and projectors to the Indian market.

Mr. Fazalbhoy is director of Sound Studios, India. This is an organization which rents out studios, camera equipment, recording equipment, or whatever may be desired in the way of studio equipment. That's another reason for Mr. Fazalbhoy's visit. He wishes to make investigation into the newest and most modern developments, so that India may have advantage of them.

Among other institutions visited by Mr. Fazalbhoy was the Hollywood Motion Picture Equipment Co., (Art Reeves).



"ArtReeves"

ArtReeves

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HOLLYWOOD, CALIFORNIA, U.S.A.

INTO PICTURES—THROUGH PICTURES

(Continued from Page 9)

to have convincing character studies to show and which become the actor's permanent library; and give the casting director a camera-eye view at least of the person's capacity and personality. It invariably arouses interest.

Perseverance is the next step. Usually several



John Van Pelt (right), as "Tex" the Prospector with Johnny Mack Brown.

studio executives must be impressed, as it is safer and more comfortable to divide the responsibility of risking a first part with a beginner.

Observation and conversations with casting directors lead me to state that the retouched and artistic (?) diffused photographs from the back-home photographer often do the aspirant more harm than good. These pictures often hail from the same old lens and perhaps on none too good paper stock. It also reveals an ignorance of the A, B, C in motion picture requirements. The motion picture industry hasn't the time to take you through the kindergarten.

The New Broom's Brief for the Stillman

As a new actor in motion pictures, I am continually surprised at the lack of co-operation the stillman gets on the motion picture set. These action

stills, shot at the end of a motion picture scene, are those observed in front of a motion picture theatre, placed there, of course, with the intent of enticing you.

If you knew of the noise, haste, conversation, orders—even cat-calls that burst out, cannon-fashion, at the end of a scene on the command "CUT!" the reader would understand why really so few stills are effective.

Over this confusion the director yells: "Move up for a still and make it fast!" or "make it snappy, Rembrandt," or some equally harassing expletives that do not spell team work. Few seem to catch the importance of the movement and the seeming conflict between the production department and the publicity department goes on.

Of course, under such circumstances, the photographer has the "jitters." His reputation and his job are at stake. He must perform a miracle. Actors are trying to concentrate for the still—the electrician demands speed (he needs the spotlights for the next scene) but the still which will affect the box office usually is taken under these conditions. Instead of co-ordination the view toward the stillman on the set seems to be that he is a necessary evil, and work with him is time wasted. It's a case of one man against twenty-five. If he demands silence it's "temperament" or "big-head," yet for the rank and file of pictures shown from the village to New York City, the stillman holds the greatest influence, push or pull on the box office.

One would assume that, with the business acumen represented in the industry, the same importance and right of way, for the few moments required, would be given the **still** as is given the **picture in motion**, remembering that the still conveys the first impression to the man on the sidewalk. All should keep in mind that the still not only sells the theatre goer, but is used by salesmen to sell the motion picture to the distributor or the theatre owner.

As long as the standard still is shown in front of all theatres it would seem good business to give the stillman a break and make it a custom by official order. The actor would appreciate it and respond. His advance is at stake every time his face appears. It would correct an obviously weak spot in picture production and, beside being in the interest of fair play, it would be money in the pocket of all concerned.

An organization sales talk by the head of publicity, backed by orders from the producer, might be in order.

NEW MOVIE MAGAZINE

A. Griffith Grey, president of Cinema Magazine, Inc., announces the publication of Cinema Arts, a new monthly in the motion picture publication field, the first issue of which is scheduled for January, 1937. Mr. Grey was formerly general manager and vice-president of D. W. Griffith, Inc.; vice-president of United Artists and for three years the head of Paramount Pictures Corporation's road show department.

"Cinema Arts is designed, edited and published for a discriminating class of people who appreciate the growing art of the present day," Mr. Grey stated. "Its cultural character is exemplified both by the quality of its contents and by the highest craftsmanship of the graphic arts.

"The modern mode of American living has been profoundly affected by motion pictures, because pictures have been instrumental in educating millions of people in buying luxury articles through seeing them portrayed in screen plays. The definite selling effect of glamorous Hollywood on Americans' desire to dress, live and play like movieland people has changed the buying habits of a nation."

Cinema Arts claims the distinction of being the largest magazine in the United States, measuring 14 by 17 inches. A special feature is its wire spiral binding. The single copy price is fifty cents and annual subscription five dollars.

Editorial and business offices are at 250 Park Avenue, New York City.

MAINSTAY

AS THE motion picture industry grows, so grows the importance of Eastman Super X Panchromatic Negative. This world-famous Eastman film guards the high photographic quality of the bulk of today's feature productions. It is truly a mainstay of one of the country's greatest industries. Eastman Kodak Company, Rochester, N. Y. (J. E. Brulatour, Inc., Distributors, Fort Lee, New York, Chicago, Hollywood.)

EASTMAN SUPER X
PANCHROMATIC NEGATIVE

SCIENCE STEPS INTO OPTICS

(Continued from Page 10)

"Globe Lens," which was rather a slow type pictorial lens of good quality.

Dallmeyer about the same time introduced a "Triple Achromatic Lens." In 1864, Dallmeyer perfected his "Rapid Landscape Lens," which was an achromatic lens with a third meniscus element of crown glass. In 1888, he patented the "Rectilinear Lens." The "Rectilinear Lens" had a double element with an air space between, and a speed of about F.14. The recent soft focus lenses date from the lens that Dallmeyer made for the painter Bergheim in 1896. In 1895, he introduced his "Stigmat," which was calculated by H. L. Aldis.

Other semi-achromatic lenses introduced following the Dallmeyer Bergheim lens were: Struss' "Pictorial"; Smith, "Semi-Achromatic"; Spencer, "Portland"; Sundach, "Single Achromatic"; Bausch and Lomb, "Plastigmat"; Gundlach, "Hyperion"; Wollensack, "Verito"; and Smith, "Visual Quality."³⁶

1866—Steinheil introduced the "Aplanat," the first of the symmetrical lenses. This lens was later known as the "Rapid Rectilinear." It consisted of two elements of flint glass of achromatic construction, and had a relative speed of F.8.

J. H. Dallmeyer independently discovered the same construction about the same time, and was granted a British patent on it.³⁵

1868—Messrs. Pugh and Field, in London, made a monochromatic spectacle lens by cementing a plano-colored glass to a plano lens.

1871—Brachet and Gesell suggested the use of uranium salts in the coloration of glass.

1881—Nathan Lazarus was granted an English patent on a process of welding crown and flint glass.³⁷

1886—Jena Glass Works, in Germany, announced nineteen new kinds of glass. In 1888, they announced an additional twenty-four types, and in 1894 eight more were announced.⁵⁰

1890—Paul Rudolph of the Jena Works introduced the first anastigmat, as the "Protar."³⁸ In 1896, he calculated for Carl Zeiss the "Planar" lens having two meniscus lenses with their concave sides facing the incident light (entering light). This planar type lens followed the Gauss principle of an earlier date. Rudolph later designed the "Unar" which was introduced by Zeiss in 1899; the "Plasmat" (1920); "Tessar" (1902). The "Tessar," which was patented in the United States,³⁹ was essentially a combination of the principles of the "Unar" and "Protar" lens.⁵¹

1891—Ernst Abbe, in connection with Carl Zeiss, announced a microscope with a stereo eyepiece. Abbe had perfected this microscope in 1870, but it was not announced until this time. In 1893, he introduced the prism binocular which used a perfected type of prism of crown glass. Abbe first became associated with Carl Zeiss in 1866.

1893—Richard Hansel, of Dresden, made a lens of celluloid.

1894—Sighting telescopes for guns introduced by Carl Zeiss.

1895—Cooke patented in the United States,⁴⁰ a "Triplet" anastigmat giving a large flat photographic image. Among the many later copies of this lens is the "Divergent Triplet" made by Taylor, which was an uncemented type of Triplet.

1898—H. Dennis Taylor perfected a modified "Triplet" having a split central dispersing lens. In

1899, Taylor describes three lenses of notable quality in his British patent⁴¹ on his lens series Nos. IIa, II, and III. Subsequently, there were many other lenses made after this principle introduced by others.

1898—Carl Zeiss introduced a binocular microscope that had an image erecting prism.

1903—Eduard Benedictus, in France, is said to have made a safety glass at this time. It consisted of a celluloid plastic between two sheets of glass. In 1909 he was granted his first French patent, and in 1912 he started a commercial manufacture of a safety glass known as "Triplex."

In the meantime, John Wood, in London, was granted an English patent on a safety glass in 1905. Wood proposed to cement glass together with Canada Balsam, while Benedictus cemented his glass and celluloid together with gelatine.

The Libbey-Owens Glass Company was the first to seriously consider the commercial aspects of safety glass. In 1926 they built a research laboratory and shortly thereafter, they perfected a type of plastic filler for the safety glass. In 1928, Henry Ford installed safety glass in his cars.

1906—Busby Allen developed an adjustable projection lens, which consisted of two units. The front unit was a negative reduction lens, while the rear compound was a photographic objective. It was used for projecting pictures, and gave images of adjustable size. In 1896, Allen had made a type of hollow lens that was to be filled with chemicals for the absorption of any desired light ray.

1913—Sir William Crookes invented a glass that would absorb both the ultra violet and infra red

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light rays. It is used mostly in spectacles.

1914—United States Bureau of Standards added to its staff a glass maker, who subsequently did much to advance the optical science.

1926—In his "Collected Papers," Lord Rosse describes to the Royal Society a machine for polishing specula and the preparation of rouge for polishing by calcination.

1931—Robin Hill calculated a lens capable of focusing 180 degrees in a complete hemisphere. It was issued by Beck and Company. (The eye can see only 170 degrees.)⁴³

1932—Bell and Howell announce their "Varo" or "zoom" lens. This lens was made by Cooke. It has the ability of following action on a motion picture set with the desired action always in focus. Too, it can go from a "long shot" into a "close-up" without moving the camera. Others made "zoom" lenses earlier. However, they were not entirely a success. The most notable one being the lens developed by Joe Walker in 1919.⁴⁴

In recent years the manufacturers of optical goods and the optical science have developed many specialized types of objectives to meet varied demands. In this chronology, because of space limitations, only the more noteworthy and evolutionary achievements of the science have been recorded. The student desiring complete information should consult the references.

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³Many museums have examples of this art, and many examples of ancient glass.



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THE CAMERA SENSATION
OF THE DAY!

Compact, precise, ultra-rapid, fool-proof and easily manipulated. Built-in, optically dependable and lens-synchronized range finder enables one to obtain critically sharp negatives. It is priced with extraordinary moderation and possesses various up-to-the-minute features, including an automatic counting and film-loading device and conveniently located focusing mount. Its refinements include: Schneider Xenon Ultra-Rapid f/2 lens, Rapid Compur Shutter with speeds up to 1/500 second, and optically perfect, built-in View Finder. Dimensions: 5x3¼x1½ inches. Takes 36 exposures 24x36 mm. cine film.

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Literature on Request

BURLEIGH BROOKS

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⁴⁸The Wedgewood process was not a successful photographic process, since the pictures made by it were not permanent (unfixed), but continued to darken when exposed to light; such as portrait proofs do today. Fox-Talbot, in 1833-35, is credited with being the first to make successful photographic pictures.

⁴⁹A symmetrical construction is a combination of two achromatic lenses with a diaphragm; thus the barrel distortion of one is off-set by the opposite pin-cushion-like fault of the other.

⁵⁰Astigmatism is an aberration of the light rays, or pencils of light, that pass obliquely through the lens. The first Rudolph Protar consisted of an achromat of spherical correction and an achromat that corrected astigmatically. Until the newer Jena glasses became available, astigmatism could only be minimized and not entirely eliminated.

FUN WITH THE MICROSCOPE AND CAMERA

(Continued from Page 13)

important to see that both camera and microscope are coupled together in such a way that the optical axis remains perfectly straight and true. In order to achieve this most satisfactorily, make-shifts should be avoided. That is to say, a camera support should be purchased or built which conforms in general to the upright shown in the illustrations. Such a stand can be made of wood or metal at very little cost by mechanically-minded amateurs. In no case should the camera be supported on a pile of books, a box or similar insecure support.

It is also more convenient to work with the outfit in a vertical position, although it is possible, when using fixed or animate specimens, to use the equipment horizontally. Not only must the stand, the camera and the microscope be solidly connected with each other, but vibration must be guarded against, in order to eliminate any possibility of blurring the image on the film. It is wise not to prolong the exposures unduly, such as would be necessary when using a too-low wattage lamp, or too high a magnification. Instead, strive for comparatively short exposures and thus eliminate, as far as possible, any vibration such as might be caused by traffic in the streets, machinery in operation in the building, etc. Don't forget that a slight tremble or vibration which may not be noticeable, will be definitely picked up by the photomicrographic equipment. As a precaution against vibration, a pad of thick, soft sponge rubber can be used as the base upon which to set the entire apparatus. It is also on account of vibration that make-shift devices are condemned. There can be no assurance of freedom from vibration if the elements of the outfit are loosely coupled together.

The next problem concerns itself with film. What film is best? Here we have something of a problem indeed, because so much depends upon the type of specimen, filter (if any) used, exposure, etc. For ordinary work to begin with, Agfa Plenachrome or Eastman Verichrome are highly recommended, but obviously when filters other than yellow are used, these orthochromatic films are out of the question. If panchromatic film is indicated, Agfa Superpan, Eastman Panatomic or Supersensitive pan are recommended.

Those who use miniature cameras using standard 35 mm. movie film can use Agfa Finopan, DuPont Micropan or Eastman Panatomic effectively. With the small cameras, fine grain in photomicrography plays an important role, hence the recommendation of these fine grain emulsions. For owners of cameras which use cut film, Defender XF pan film will prove ideal for all routine work.

The matter of exposure is of prime importance and it becomes necessary to make a few test exposures in the beginning, and because each outfit will in all probability differ from the next, in accordance with the equipment used, a series of tests will be found to give more definite information than anything else. Points to be considered in this include, among others, magnification, type and speed of film, type of specimen, intensity of illumination and available shutter speeds. In beginning, a test of a simple specimen, such as the wing of a house fly, should be used. Each exposure in a series of tests should be proportionately greater, or in other words, twice that of the one preceding it. As these tests are being made, notes should be carefully

made so that after the test negatives are developed, the exposure can be definitely determined along with the quality.

The magnification of the photomicrograph is in proportion to the distances between the eye-point of the microscope, a few millimeters above the top of the eye-piece, and the film in the camera. This distance in the Bausch & Lomb Photomicrographic Outfit is 2.7 inches. Naturally the magnification secured on the film is not the same as that secured when observing the specimen visually through the microscope. In short, the exposure problem is one of tremendous variation, and no one can give exact figures without knowing the complete set-up, conditions and the equipment. It is only through experimentation that the correct data concerning the exposures are to be had.

In photomicrography, a print may appear poor to the casual observer. It is desired to show as much fine detail as possible, for this is the key to successful photomicrography, and in order to get the proper results, the print may at first glance appear indistinct. On the other hand, the poorly-made photograph may appear sharper and reveal more contrast. Look for lines or dots that lie close together in order to determine the true worth of a photomicrograph.

There are so many conditions affecting the results that it requires considerable experience to determine a good from a poor photomicrograph. To illustrate, improper lighting can completely alter the appearance of the specimen, to mention just one condition. The keeping of careful notes, as one goes along, is the most satisfactory way of progressing without discouragement in the problems of photomicrography.

It is necessary to progress in this work step by step; slowly, but surely, for it is pure folly to attempt too difficult a subject without having previous experience with the simple ones. In the long run, the successful amateur will have a series of photomicrographs which are completely satisfactory in every way, and a certainty that once he becomes interested in the work, he will continue as an ardent photomicrographer. If too difficult a subject is tackled to begin with, the individual will not only become discouraged with his inferior results, but refuse to have anything further to do with a microscope in the future. Such a condition is entirely unnecessary.

It is not intended here to go exhaustively into the matter, but rather to introduce a marvelous in-become increasingly popular. The technically-minded amateur will undoubtedly find in photomicrography a new outlet for his activities and problems which will tax his ability. It is hoped that many new thousands of camera users will delve into the mysteries of the "Invisible World" in the future months.

As the winter months approach, it offers a delightful, yet inspiring and beneficial hobby for those who are the fortunate possessors of both a camera and a microscope. It is strongly urged that a study of the various forms microscopy be absorbed in order that the best results may be secured with the minimum of wasted time and discouraging results.

A few of the books which I believe will be not only of great interest, but value as well to the budding amateur photomicrographer include:

"Adventures with the Microscope" by Julian D. Corrington, published by Bausch & Lomb Optical Company, Rochester, New York, price \$5.00.

"Hunting with the Microscope" by Gaylord Johnson, published by Leisure League of America, price 25c.

"Wonders Through the Microscope," published by Popular Science Monthly, New York, price \$1.00.

"Photomicroscopy," published by Eastman Kodak Company, Rochester, New York, price \$1.00.

"The Microscope" by S. H. Gage, published by Comstock Company, Inc., Ithaca, New York, price \$4.00.

For stimulating reading of a literary nature, try "Microbe Hunters" by Dr. Paul DeKruif and "Arrow-smith" by Sinclair Lewis.

THE NATIONAL CONFERENCE OF VISUAL EDUCATION

(Continued from Page 18)

leave the matter of entertainment to the local picture shows. Mr. Hamilton recommends a central projection room in a school, adequately equipped, and always ready for immediate use at any time.

R. W. Damron, Superintendent of Schools at Franklin Park, Illinois, speaking on "Practical Visual Education," outlined what could be accomplished by smaller schools on limited budgets. In his school, visual education equipment consists of one 16 mm. silent camera, 16 mm. sound projector, lantern slide machine, and a public address system inter-connected with the amplifier of the sound projector. Pupils and teachers are instructed in the running of the equipment. Their 16 mm. camera records various school activities, and allows the school annual to be presented visually rather than in printed form. For best instructional purposes films must be available at time the subject is studied, not later. Funds for equipment should be allotted as for any other school materials and not considered, as so often, as a side-issue. Mr. Damron also touched upon the possibilities of county film libraries to supplement the work now being done by state libraries.

J. A. Hollinger, Director, Department of Science, Pittsburgh, Pennsylvania, Schools before showing an effective example of a class-room film, briefly stated his conception of the value of film instruction. He holds that schools should allow "\$1.00 per pupil per year allotment for film instructional purposes," and follow this up with a very definite program. It has been the experience of the Pittsburgh schools that "movie days" have cut absences to a minimum, thus proving the interest stimulated by film presentations. Mr. Hollinger ran a two-reel sound subject, "U. S. Coast Guard," recorded on 16 mm. film.

Space does not allow a complete printing of the program, but appended below is a partial list, picked at random, of films and speakers presented to the

Sound Film (2 r)—"Remember Jimmy"—H. C. Conference:

Sound Film (2 r)—"V-8 Honey Moon"—C. E. Fawcett, Sales Department, Ford Motor Co.

Sound Film—"The Nickel Album"—Douglas Rothacker, New York City.

Silent Film (1 r)—"Movies Stimulate Travel"—W. T. Parkhill, Champaign, Ill.

Sound Film (3 r)—"International Harvester Diesel"—L. A. Hawkins, International Harvester Co., Chicago.

Sound Film (1 r)—"Boulder Dam"—L. A. Hawkins, International Harvester Co., Chicago.

Sound Film (1 r)—"News Reel"—Jose R. Nin, Pres., J. R. Nin Film Co., San Juan, Porto Rico.

Report on "National Visual Instruction Survey"—Hon. C. M. Koon, Senior Specialist Radio and Visual Education, U. S. Office of Education, Washington, D. C.

Sound Film (4 r)—"Take Me Out to the Ball Game"—Official American League Film, sponsored by Fisher Body, Detroit Division, General Motors Corp.

Sound Film (5 r)—"Sunkist Speaks"—C. E. Hollender, Sales and Adv., California Fruit Growers' Exchange.

Sound Film (1 r)—John Schlegel, Pan American Airways, Chicago.

"Visual Education in the Skokie Valley CCC Camp"—W. L. Randle, District Educational Adviser, Glenview, Ill.

"Films for Character Building"—Dr. I. E. Deer, M. P. Producers & Distributors of America.

"The De Vry School Films"—Norman D. Olsen.

"Trouble Shooting in Sound"—J. G. Black, Engineering Dept., Herman A. De Vry, Inc.

Carter, Keep Chicago Safe Committee, Chicago.

Silent Film (2 r)—"Digging Into the Past"—Metropolitan Museum of Art, New York City.

The 1936 National Conference on Visual Education was a most interesting and educational event for which Herman A. De Vry, in sponsoring the sessions each year, is deserving of much commendation. The marked increase in attendance this year and the quality of the program presented are indicative of the great future potentialities of non-theatrical motion pictures.

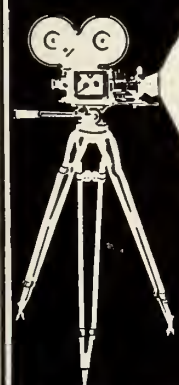
I.A.T.S.E. AND M.P.M.O.

The Banner Pictures Corporation has just completed its first production, "Murder in Chinatown," featuring Norman Foster, who was also the director.

Mr. Foster was supported by Elaine Shepherd, Theodore von Eltz, Polly Ann Young, Vince Barnett, Arthur Lake and Eddie Gribbon.

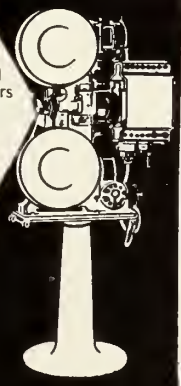
Arthur Reed and James Murray were the cameramen; Carl Pierson, film editor while Finn Kimball and James Love were respectively producer and assistant. The picture was the first of a series of four.

The producers extended to Messrs. Reed and Murray the courtesy of permitting the I.A.T.S.E. and M.P.M.O. label to appear opposite their names on the main title, the first time this label has appeared on the main title during the last three years.



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REAL BARGAINS in 16 and 35 mm. movie equipment and still cameras. Newest types cameras and projectors in all popular makes. Save money on film, lights, lenses and all essential accessories. Our 36 years of experience stands back of every sale. Before you buy, send for our new bargain booklet. Burke & James, Inc., 223 W. Madison St., Chicago.

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SILENCED MITCHELL CAMERA, 40, 50 & 75mm. Astro F2.5 Lenses, Upright Mitchell Finder, Mitchell Matt Box and Sunshade, two 1000 ft. Magazines, Friction Tripod Head and Legs, complete equipment with Carrying Cases, \$2600.00. Camera Supply Co., Ltd., 1515 No. Cahuenga Blvd., Hollywood, Calif.

FOR SALE—SOUND RECORDERS AND EQUIPMENT

LIKE NEW BELL & HOWELL 5-way Sound Printers and Sound Moviolas. Reasonable price. HOLLYWOOD CAMERA EXCHANGE, 1600 Cahuenga Blvd., Hollywood, Calif.

ART REEVES, latest model 1935, double system sound recording installation, factory guaranteed, Automatic Speed Control Motor, Twin Fidelity Optical Unit, Bomb microphone, the only genuine, modern, workable ArtReeves equipment for sale in Hollywood outside factory. CAMERA SUPPLY COMPANY, LTD., 1515 No. Cahuenga Blvd., Hollywood.

BELL AND HOWELL CAMERA silenced, adapted for color, with variable area recording single system sound. Complete outfit like new, ready to shoot. Price, \$3000.00. Hollywood Camera Exchange, Ltd., 1600 Cahuenga Blvd., Hollywood, Calif. Cable: Hocamex.

COMPLETE DOUBLE SYSTEM SOUND RECORDING equipment. \$800. J. Burgi Contner, 723 7th Ave., New York City.

FOR SALE COMPLETE VARIABLE AREA SOUND TRUCK with extension mixer, camera motors, microphones, converter. Ready for production. Write Box B.-C., International Photographer.

FOR SALE COMPLETE VARIABLE AREA SOUND TRUCK with extension mixer, camera motors, microphones, converter. Ready for production. Write Box B.-C., International Photographer.

MISCELLANEOUS

THE INTERNATIONAL PROJECTIONIST, a monthly magazine published in the interests of the projectionist. Interesting, instructive. Yearly subscription U. S. and possessions, \$2; foreign countries, \$2.50. James L. Finn Publishing Corp., 580 Fifth Ave., New York.

COMPLETE COURSE IN FLYING—If interested in aviation, see Roy Klaffki, 1605 North Cahuenga Ave., Hollywood.

WANTED—To know of the whereabouts of motion picture relics, documents, or equipment of a historical nature for Museum purposes. Write Earl Theisen, care of International Photographer, 1605 Cahuenga Ave., Hollywood.

8 MM. AND 16 MM.

8MM PALOMATIC, \$1.50; Panchromatic, \$1.70; S. S. Panchromatic, \$2.10; Dufaycolor, \$2.75; on daylight loading spools, with processing. Economic titling film. Home titling data reversible negative; processing, etc. 8MM equipment and accessories, card for catalogue. Prizes given with purchases. "Camera Trails Through the Southwest," 112 pages, 33 illustrations, 75c. Film Specialties, Box 111-N, El Monte, California.

16MM DUFAYCOLOR FILM on 50 foot rolls, furnished without processing, instructions if wanted, closing out all 16mm stock. While they last only \$2.85 per roll postpaid. Exchange, Box 607, El Monte, Calif.

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"CAMERA TRAILS THROUGH THE SOUTHWEST." Consisting of 112 pages and 33 illustrations, concentrating on the camera possibilities of vacations and jaunts in the National Parks. Film Specialties, Box 111-N, El Monte, California.

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NEWSREEL COVERING AT G. O. P. CONVENTION (Continued from Page 21)

over the entire auditorium. In the extreme back of the auditorium high above the balcony was erected a large camera stand for the long shots. Another camera stand was erected in the shape of a triangle, eighty feet in front and to the left of the speakers stand, seven feet above the floor so that close up pictures could be made of the speakers. The reason the stand was in the shape of a triangle was so that all of the six sound cameras in this stand would be facing the speaker without interfering with each other.

On top of the broadcasting booths were also camera platforms for back shots. Chas. Ross, of New York, had charge of the lighting and he placed seven strips each containing five 1500 watt lamps in front and over the speaker's stand. Near the ceiling on the platforms spaced around the auditorium were eight high intensity sun arcs. At each arc was a local IA electrician, all of the lights were controlled from the camera platforms by a system of intercommunicating phones.

Paramount set up a lab at the Tri-State Motion Picture Co. (Jack Flannigan, former Pathe News cameraman's place) and specialied the convention from Cleveland, thereby securing a beat of from twenty-four to forty-eight hours over the country with actual convention pictures.

We started making pictures a few days before the convention opened, of arrivals, street scenes, broadcasting companies getting their control rooms in shape, the wire services with their many teletypes in operation and many other pre convention activities.

John Begg, on leave from Pathe, was the contact man for the Republican National committee handling the newsreels and he did a swell job.

THE WOOD - FRITH TEST METER

Here is a handy and comparatively cheap instrument that will be very serviceable around radio or sound equipment, because it will measure D.C. or A.C. from 5 to 1,000 volts; and D.C. or A.C. from 1 milliamper to one ampere; measure resistances from 0 to 10,000 ohms, all on one meter,—a D.C. volt-milliammeter, 1000 ohms per volt, with an ohm scale and a 50, 250 and 1,000 volt scale, similar to the Weston model.

The A.C. readings will not be full scale on the meter, due to the internal resistance of the rectifier used. These readings can be calibrated, however, and will always read the same for the different values.

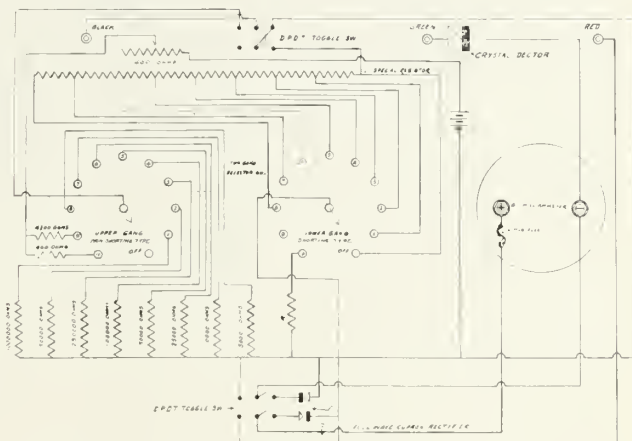
The entire unit is mounted on the back of 3/16" Bakelite panel, 6" x 8" and all is contained in a box 11 5/8 x 6 5/8 x 2 1/2" high.

The accompanying diagram shows the proper connections for the various parts and resistors. The special resistor indicated is home made and is wound on 1/16" Bakelite strip, 7" long and 3/4" wide, the values being determined by trial, with the use of two dry cells and variable resistors in series, beginning with the shunt of least resistance and reducing the reading on the milliammeter according to the steps required with another ammeter in circuit to show that 1 mill is always being drawn from the batteries.

The selector switch, if of the Yaxley type, can

easily be arranged so that one gang is non-shorting and the other gang of the shorting type.

This instrument also shows the presence of radio frequency by means of a coil of No. 24 wire, 5/8" diameter, 15 turns, wound on a mandril and shel-laced and plugged in on the black and green banana plug receptacle.



This instrument, even with the cheaper type of 1 watt resistors, if the resistors are properly selected, is accurate within the limits of the milliammeter.

The astonishing fact is that this instrument can be built for approximately \$20. Compare that with the price of factory made instruments to cover the same ranges and cost many times that amount.

CINEMA TIDINGS

(Continued from Page 19)

tary type; housed as an integral part of the camera. Coupled and synchronized with the focusing mount, the range is found by moving the focus-lever which operates from a handy position directly above the shutter. When the split image is brought into a coincidence, the lens is in focus. To the right of the range-finder is a built-in optical view-finder. An auxiliary focusing scale on the lens mount shows at what distance the picture is being taken. The focusing is possible from three feet to infinity. A Com-pur-Rapid shutter affords nine speeds, from 1-second to 1/500-second, also "time" and "bulb." Opening the camera sets the focus automatically at infinity.

Automatic film measuring and centering prevents overlapping of exposures. To make film winding doubly convenient, the winding knob may be pulled out to extend it beyond the range-finder housing. Specially designed film pressure plate holds film in microscopically-fine focal-plane adjustment, assuring a sharp image throughout the negative area. The Kodak Bantam Special weighs 16 ounces.

New Ektar Lens

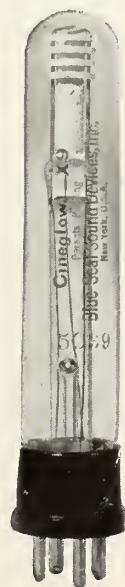
Announced with the Kodak Bantam Special, there appears the first of the Ektar lenses—a new series of high-precision Kodak Anastigmats. The 45 mm. F.2 Ektar has six elements. Made according to a newly computed Eastman formula, its performance, even at full opening of F.2, is said to enthruse the most critical. Eastman designers, it is stated, have succeeded in reducing both spherical and chromatic aberration to negligible proportions, at the same time maintaining a perfectly flat field, free from astigmatism and distortion to a degree which is remarkable in a lens of such large aperture. Attributes of the new Ektar all contribute to one end—

microscopically-clear negatives, vital in enlargement work.

Two Films Available

The Kodak Bantam Special loads with eight-exposure roll film, available in two different types: Panatomic, F828; and Super X, X828.

Extremely sensitive to yellow, green and red, Super X film XX828 makes possible good negatives much earlier and later in the day, and is ideal when high shutter speeds are necessary to catch rapid action. Used indoors, it goes a step farther than Kodak "S" Pan and, with all its added speed, does not show an increased grain size. Development instructions, packed with each roll, should be followed exactly.



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- Long Life
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CINEMACARONI

(With Sauce for Those Who Like It)

By ROBERT TOBEY

HOLLYWOOD HONEYMOON

or
The Loves of Lili Liverblossom

by
R. THRITIS

Synopsis of preceding chapters:

Let's not go into THAT again!

CHAPTER XXII ESCAPE

As he clung to the outjutting rock, Perriwether Murgle looked into the yawning space below him—much more space than he'd ever had in the newspapers, he mused. He shuddered and looked up again at the cleft in the rock twenty feet above.

"Well, I guess that's not the first crack that's been over my head," he muttered, his sense of humor getting the better of him.

At that moment there was a great snapping and crunching above, and the beaks of two small eaglets poked over the edge of the lair. Small beady eyes blinked at Perri, and then the two looked at each other.

"Funny looking duck, isn't it?" said one. "It must be either maw or paw!"

"Never mind the guessing contest," snapped Perri. "Lend a hand here."

The two eaglets were quick to comprehend and immediately flew down and picked Perri up, setting him back in the eyrie above.

"Well, which are you," asked one of the eaglets, more impatient than breathless. "Are you maw or paw?" The two poked at him familiarly.

Perri didn't answer, but reached for the jug still half full of amber liquid. He took a big swig and smacked his lips.

"Ah," said Perri. "That'll do the trick." With that he patted the two young eaglets on their bald pates (eaglets of the family haliaeetus leucocephalus are bald from birth, the poor kids), flapped his arms, and was off, buckety-buckety, as fast as he could go. As he flew, he thought of poor Lili alone in the hands of Potty, the ghost. After all, Lili didn't know Potty very well. She was a fool to trust herself with him. And what could poor Perri do. What could anyone do to a ghost.

At this point, there was a whoosh and a rush of damp air, and there was the ghost beside Perri, with Lili slung under one arm.

"Oh, there you are," cried Lili, with her customary originality. "Giblets, but we were worried. We came back to see how you were doing."

"I'm doing all right," said Perri, brightly. "How are all your folks?"

They set off together this time in the direction of Hollywood. They flew along for some time in silence.

"Want me to carry her for a while?" said Perri finally.

"No need to," said Potty. "She's light as a feather."

"You ought to pick her up some time after a big meal at the Brown Derby," said Perri. (He had a discount card there.) "Say, where'd you get that mink coat," he added suspiciously to Lili. "That's not the one I gave you!"

"Potty picked it up for me," answered Lili, hesitating a little. "I got cold on the way out."

"M-hm. Something he picked up in the five and ten, I suppose," said Perri nastily.

They flew the rest of the way back to Lili's apartment in icy silence.

(Here we have a strange triangle—the glamorous movie star Lili Liverblossom; Perriwether Murgle, her handsome and quick-witted press-agent; and Potty, the ghost, who while not exactly a creature of parts, has his advantages. What will come of this strange situation? If I ever find out, I'll tell you. Take a gander next month—you can't tell when the news will break.)

Comes to Hollywood now from Lunnon Towne a gal high Phyllis Clare, who takes up a contract with Metro-Goldwyn-Mayer Studios. Miss Clare has some outstanding characteristics.

For one thing, she is a combined blonde and brunette. The front part of her hair is blond; the tresses at the back of her head are brunette. Miss Clare explains the phenomenon by stating that when but a babe she was dropped by a nurse.

This just goes to prove what has been hinted before; you don't HAVE to be dropped on your head to get in pictures, but it helps.

COOKERY DEPARTMENT

(July was a hot month)

Into the Frying Pan

Ginger Rogers and James Stewart
Marian Marsh and Al Stewart
Grace Durkin and Bill Henry

Into the Fire

Irene Hervey and Allan Jones
Myrna Loy and Arthur Hornblow Jr.
Sheila Browning and Henry Wilcoxon
Jean Chatburn and Frank Orsatti

KNEECAP REVIEWS

(No space left on my thumbnails)

"TO MARY, WITH LOVE," a tender if somewhat slow-moving triangle drama of the love of a woman for a handsome money-worshipper. Splendid work by Warner Baxter, Myrna Loy, Ian Hunter, and Claire Trevor lift the picture out of what would otherwise be mediocrity.

"THE SINS OF MAN," wherein Jean Hersholt again takes up the torch of Emil Jannings. While the picture as a whole will no doubt prove too much of a strain on the tear ducts for the average audience, it is a fine piece of work throughout. Hersholt is superb as the Tyrolean sex-m, and his age transition is convincingly portrayed. Don Ameche is an interesting newcomer and handles two roles well. Film might have been a box-office wow if a little comedy relief had been injected. Direction by Otto Brower and Gregory Ratoff is sympathetic and smooth. Sid Wagner's photography is well above average.

"THE PRINCESS COMES ACROSS," and it takes Fred MacMurray, Douglas Dumbrille, Alison Skipworth, William Frawley, Porter Hall, George Barbier, Lumsden Hare, Mischa Auer, Bradley Page, and a few others to make it possible. The Princess who comes across—the ocean—is none other than (you'll never guess, unless you've been reading the papers again) Carole Lombard. And let me tell you Carole makes a very fine Princess Olga of Sweden. Her accent is marvelous, and I'm no Swede. The picture has mystery enough and murder enough for the most bloodthirsty, with a tasty little romance to boot.

William K. Howard directed this very fine piece of film fare, and Ted Tetzlaff in his photography makes it evident why Lombard cries for him like children cry for Castoria.

A news item from London states that Tay Garnett has been offered a million dollars by Japan to put the Japanese film industry on the map. According to the dispatch, Tay is "still considering the offer."

Whereas you'd think he'd toss it aside like a button.

But maybe he's afraid he'll get paid in yen and he knows the Jap have no yen for the Americans.

Besides, those fellows are pretty cagey. You'll notice they didn't say what map. It will probably turn out to be a map of the United States.

Silly Sally thinks a movie magnate "must be terribly attractive."

The latest contribution to the GEEVASENCE DEPT., is from an anonymous writer. You figure out why he's anonymous.

GEEVASENCE with the word "INERTIA." "You can't get into a motion picture studio inertia have a lot of drag."

HOLLYWOODCUTS, by the Shovel Boys (they dish the dirt.) * * * The meteoric Texas Centennial is just shooting fragments all over the country. One of 'em landed in Hollywood in the person of Lucy Ann Snell, personable Texas girl sent here by Governor James Allred. She came for the purpose of adding a few Texas Rangers to her home State's police force. And the first to receive a commission as a Ranger was none other than Louis B. Mayer of M-G-M. Joan Crawford, formerly a Texas gal, was made a Captain in the Texas Rangerettes, Amazon branch of the Rangers. In retaliation, Universal made a test of Miss Snell, and she may remain permanently in Hollywood. * * * The court was thoroughly covered at the exhibition tennis match at the West Side Club the night of their first Dinner Dance. There were four players on each side—two at the net and two baseline players! Among the eight Hollywoodmen in the game were Frank Shields, Ralph Bellamy, Count Alfredo di Carpegna, Milton Beecher, and Frank Ross. In the ballroom, a few people hung on after the main gang had fled and were lucky enough to hear Ann Sothern play the big grand piano and sing. There was a hue and cry raised for George Murphy to dance and Gertrude Neisen to sing, so Ann and Count Carpegna played the piano, and George Murphy sang and Gertie Neisen danced!



* * * On July 23 a surprise birthday party was given at the Brown Derby for Helen Ferguson. Among those to congratulate Helen, who looks younger than ever, were Jeannette MacDonald, Anita Louise, Fay Wray, Gene Raymond, Mr. and Mrs. John Mack Brown, Harriet Parsons, Eadie Adams, Glenda Farrell, Dr. Herbert Gaillard, Ella Wickersham, and Liza Wilson.

At a huge dinner at the Breakfast Club on July 8, an organization called the Association Cinema Stars was formed under the guidance of pioneer J. Stuart Blackton. Over three hundred prominent motion picture people were present, most of whom became members of the organization. Requirements for membership include ten years of distinguished and outstanding motion picture work. Officers were elected, but instead of the usual titles of President, Vice-President, etc., titles typical of the industry were bestowed.

A list of officers follows:

Producer

Commodore J. Stuart Blackton

Directors

William Farnum
Lionel Barrymore

Leading Men

Maurice Costello
Bryant Washburn
Creighton Hale
Jack Mulhall

Leading Ladies

Florence Turner
Virginia Pearson
Agnes Ayres
Alice Calhoun

Heavyies

Paul Panzer
Sheldon Lewis
Montague Love
Wilfred Lucas

Comedians

Flora Finch
Charles Murray
Otis Harlan
Walter McGrail

Production Manager

Victor Potel

Casting Director

Harry Burns

Call Boy

Billy Fletcher

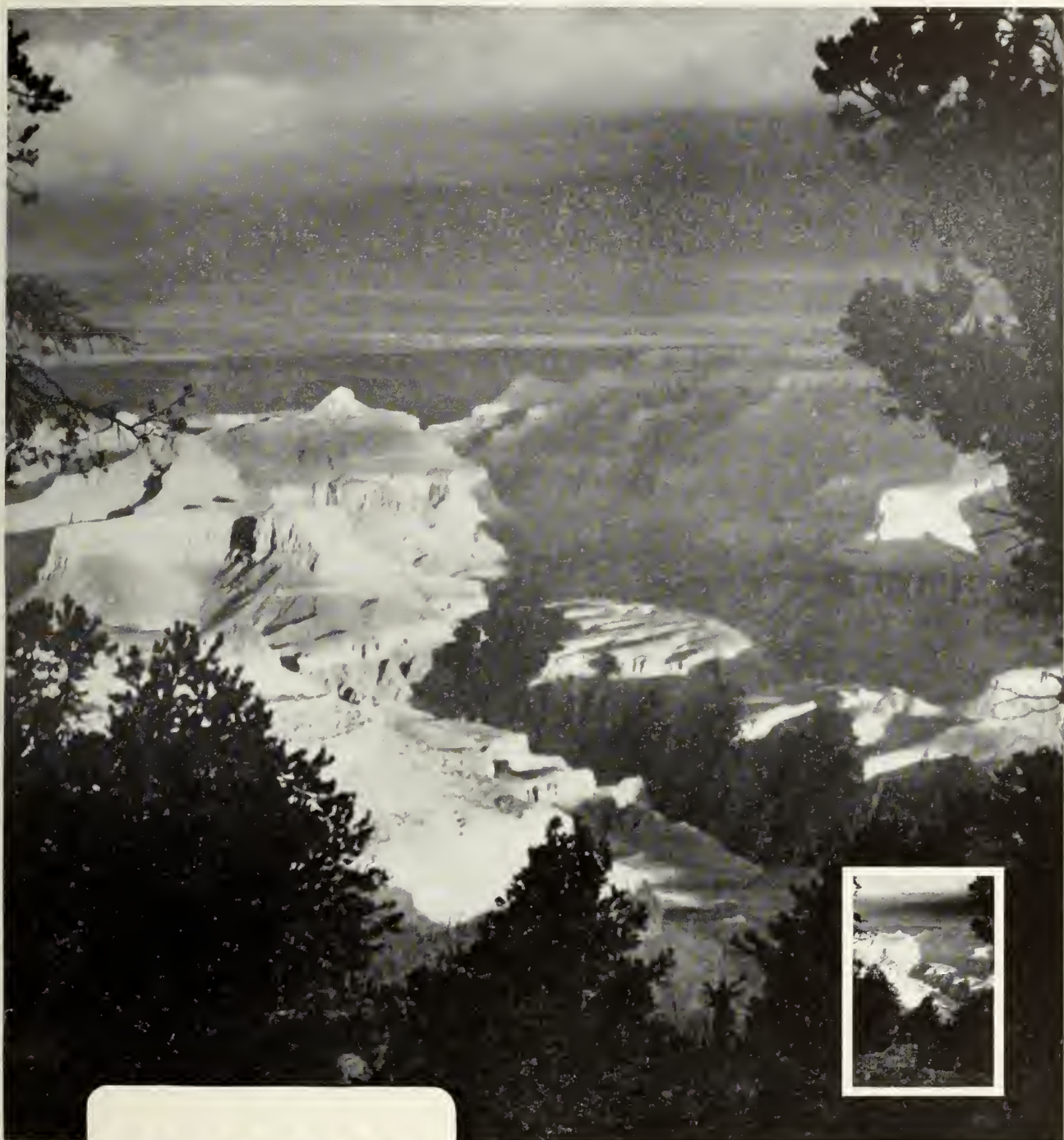
Chaplain

Rev. Neal Dodds

It seems the romance between Gail Patrick and Bob Cobb is cooling off. Can't just be a natural defense against the hot weather, can it? * * * Some of the wisecracks are predicting that Simone Simon will turn out to be one of the year's best bets, considering her work in "Girls' Dormitory." Chief rub is her display of temperament, which has turned a lot of Hollywood against her. Some quarters seem to believe she was put up to it before she left France, having been told that the Americans expected foreign temperament and would have no use for her if she was easy to handle. * * * Edward Everett Horton left for Europe early in July. His Encino estate is being extensively remodeled during his absence. Horton makes so many changes in his place that he keeps a boss carpenter on salary year in and year out. * * *

HOW SAD DEPT.

Here lies the remains of Director McBipp, Though he drank from a saucer he'd had many a ship.



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—HOLLYWOOD—

FIFTH YEAR

SEPTEMBER, 1936

VOL. 8
No. 8



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ALEXANDER KAHLE

MOTION PICTURE ARTS AND CRAFTS

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Eastern Butterflies



PHOTO BY ERNST KEIL

INTERNATIONAL PHOTOGRAPHER

MOTION PICTURE ARTS AND CRAFTS

Vol. 8

HOLLYWOOD, SEPTEMBER, 1936

No. 8

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Its Branches; Professional and Amateur; Photography; Laboratory and Processing,
Film Editing, Sound Recording, Projection, Pictorialists.

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Frontispiece by Ernst Keil

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A New Label Makes Its Bid for Recognition in the British Empire

The opening of Max Factor Studios, cosmetic laboratories and manufacturing plant in London marks another great step forward in the international expansion of this unique organization which has contributed so much towards the advancement of the motion picture industry . . . and the beautification of the women of the world in general.

Max Factor's progress has been merited. His advance has measured up to every branch of the motion picture industry and has overstepped most of them. His progress in the manufacture of face powders, rouge, lipstick and other make-up preparations has been the inspiration of every other maker of those products. Max Factor has been the leader and the creator—the others have followed.

The announcement of Max Factor's opening of cosmetic laboratories, manufacturing plant and salon in London now makes available to the British profession the same type of make-up service that has proven so popular and indispensable to the Hollywood film industry and foremost stars of the screen for the past quarter of a century.

In addition to creating and manufacturing theatrical make-up for the British motion picture industry, Max Factor will also manufacture his complete line of Society Cosmetics in London.

Davis Factor, eldest son of Max Factor, and general manager of Max Factor and Company, expects to supply the entire English market, including all British possessions and the whole of Europe, from the London branch by January 1, 1937.

"In the few short months that we have been manufacturing abroad, every indication is that England will provide as large a market for Max Factor products as the United States," said Davis Factor, who left Hollywood August 21 to return to England for the second time this year.

It was Davis Factor who had the full responsibility of establishing and organizing the Max Factor branch in London. Arriving single-handed last November, the new plant was not only completely organized, but also running at full capacity by May 1, 1936. Besides the factory and laboratories, which are located at 17, Gorst Road, Park Royal, N. W. 10, luxurious Make-up Studios have been established at 49, Old Bond Street.

The laboratories and factory have been patterned as closely as possible after the plans of Max Factor's new \$600,000 Hollywood establishment, which was just opened last November.

All machinery used in the making of their cosmetics is an exact duplication of the special equipment which was made-to-order for the Hollywood manufacturing plant.

Research and analytical laboratories are iden-

tical to those in Hollywood, with Max Factor employing the same number of chemists in his London laboratories as in the Hollywood laboratories.

According to Davis Factor, great pains were taken to make the English branch as near a replica of the Hollywood Studios as possible.

"It is only natural that we should attempt to do this," he said, "since our working set-up in Hollywood is so satisfactory. By patterning our London branch after the Hollywood headquarters, we are now able to immediately benefit by the manufacturing experiences which we have learned in this country during the past twenty-seven years."

Mr. Factor also pointed out the absolute necessity for maintaining identical laboratory set-ups on the two continents.

"The labs constitute the backbone of our industry," he explains. "Experiments are constantly being made with new formulas and new ideas. Then, too, complete analytical laboratory facilities are absolutely imperative to insure purity and a uniform standard of all the products which we regularly make."

"The prime reason for establishing research laboratories in London was because of the fact that I will be forced to divide my time between Hollywood and London, spending about six months of every year at both plants. With complete research laboratory facilities in both places, no time will be lost in finishing any research work that I may start in either country. It will just be a matter of moving the experiments from one laboratory to another."

In Hollywood, according to Mr. Factor, the research laboratory is constantly working to create or perfect some new make-up requisite for the motion picture industry. Just recently a new make-up was created in the Max Factor laboratories that will eventually replace grease-paint altogether. Other experiments are daily being conducted on make-up for television.

Since Max Factor's English laboratories will serve the British film industry in the same manner that the Hollywood laboratories serve the American film industry, the importance of complete laboratory facilities becomes quite apparent. Many developments, originally created in the field of theatrical make-up, are later adapted and perfected for street wear also.

In addition to his son, Davis, Max Factor has sent two more sons, Frank and Sidney, to London to take charge of his English interests.

The organization of the British factory and laboratories also necessitated sending a staff of skilled chemists, demonstrators, factory workers, and sales managers to London. Each of these employees will spend at least one year in England training British workers in the Max Factor methods.

"Studio Call Service" has been organized by Cameraman James Murray, Local 659, in association with Bernice Ceder, with headquarters in Suite 6, 6418 Santa Monica Boulevard. "Studio Call Service" gives a twenty-four hour service to all studio workers who have need of such service. The charges are small and the slogan is: "If the studio calls you we will get you." The service adds its mite to the great machine called "The Industry."



Motion Picture Sound Recording

Chapter XXVII

THE four chapters immediately preceding this one discussed what we have called the basic amplifier—an amplifier designed to serve as a main recording amplifier for motion picture sound recording, as the preliminary or sale amplifier for a public-address system, or as to the speech amplifier for a radio broadcast transmitter.

In those other chapters, we described the original amplifier designed to operate from batteries, the microphone input and the output circuits for it, metering arrangements, grid and plate filtering, and finally the adaptation of the amplifier to operation from an alternating-current source. This chapter completes the description of this basic amplifier.

Cathode Biasing

It will be noted that in the cathode circuits of the first two stages of this amplifier there are resistors

may be understood by reference to Figure 2 and the following explanation:

A current flows at all times in the plate circuits of the tubes in this amplifier when the filaments are heated, since these tubes are biased to operate as Class A amplifiers. This plate current flows (contrary to the common and erroneous conception of current flow) from the negative terminal of the plate voltage source—marked **B**—in Figure 2—through the resistance **BR**, from the cathode to the plate within the tube as an emission current (a flow of electrons through vacuum) and through the primary of the transformer to the positive terminal of the plate voltage source, **B**+

This plate current that flows through the resistor **BR** causes a voltage drop across the resistor that is equal to $I \times R$, where **I** is the current flow in **amperes** (one ampere is equal to 1000 milliamperes) and **R** is the resistance in ohms of the biasing resistor **BR**. This is simply Ohm's Law. Now let us

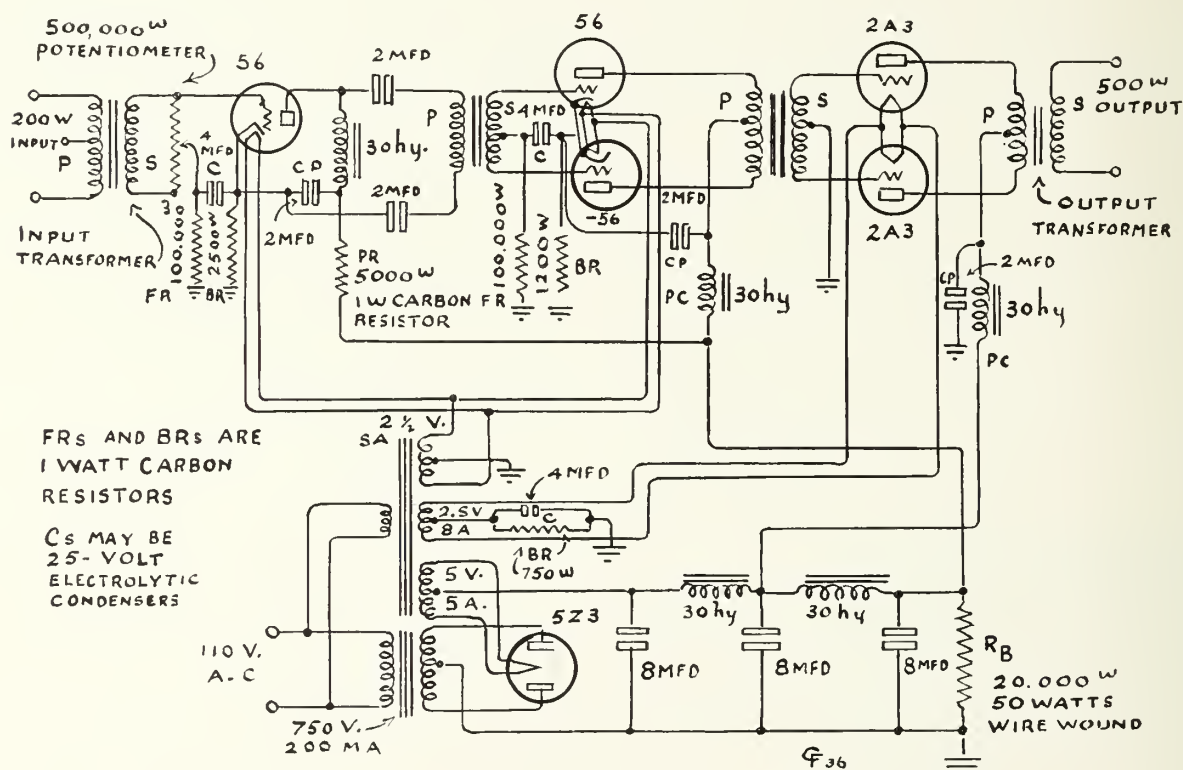


Fig. 1. Diagram of the improved version of the basic amplifier.

marked **BR**, and that there is a similarly marked resistor connected between the center-top of the final amplifier stage filament transform and ground. These resistors are for the purpose of providing **C** bias voltage for the grids of the various tubes, thus making unnecessary the bias batteries used in the original model of this amplifier. Their functioning

see this worked out in a practical example.

The type —56 tube in the first stage of amplification has a voltage of about 250 volts applied to its plate. At normal grid bias voltage of 13.5 volts, a plate current of five milliamperes flows for this plate voltage. In Figure 1, it will be seen that the bias resistor, **BR**, has a value of 2500 ohms. Apply-

ing this in the above $E=IR$ formula, $E=0.005 \times 2500$, or $E=12.5$ volts. This is not quite the required 13.5 volts, but it is close enough.

Since in the second stage of amplification of Figure 1 two tubes are used, the plate current is twice five milliamperes, or ten milliamperes, the cathode resistor has a value of 1200 ohms, and the problem becomes, $E=0.010 \times 1200$, or $E=12.0$ volts. This again is a bit below the required 13.5 volts, but it is close enough; and it saves the expense of having resistors of special ohmage made up.

Theory of Cathode Biasing

By reference to Figure 3, the theory of cathode biasing will be understood. Here a resistance, R_p , has been substituted for the "plate" resistance that exists between the cathode and plate within all vacuum tubes; and another resistance, marked R_t , has been substituted for the primary of the transformer. It will be apparent that these two resistors and the cathode bias resistor BR in series form a simple voltage divider circuit across the plate voltage supply.

According to the laws of electricity, the voltage divides itself across these resistances in proportion to the relative value of the resistance in ohms. Thus the grounded end of BR is the most negative point in the circuit; point A is more positive by the voltage drop in resistor BR ; point B is more positive than the grounded point by the sum of the voltage drops across BR and R_p ; and point C has the same positive voltage as the positive terminal of the plate voltage source. In other words, the sum of the voltage drops across BR , R_p , and R_t is equal to the voltage of the plate voltage supply.

Since the cathode terminal in a vacuum tube circuit is considered as the source, or the point of zero voltage with respect to all other portions of the tube circuit, and since the cathode in this case is positive with respect to ground by the voltage drop across BR , then by reverse English we can say that the cathode (point A in Figure 3) is at zero potential and the ground point is at a negative potential by the voltage drop across BR . Since the grid return circuit connects through resistor FR (see Figure 2) to ground, this in actual effect makes the grid negative by the amount of the voltage drop across the cathode bias resistor. By computation we found this to be 12.5 volts in the first stage of the amplifier, and 12.0 volts in the second stage.

The same condition holds in the third stage of

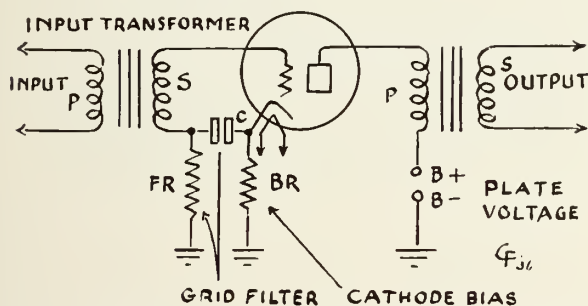


Fig. 2. Schematic Diagram of Single Stage Amplifier showing Grid Filter and Cathode Bias Circuits.

amplification, where the center tap on the filament transformer winding takes the place of the cathode of the preceding stages. This is necessary, since the 2A3 tubes of this stage are of the filament type instead of the indirectly-heated type, as are the type —56 tubes of the first two stages.

The Power Supply

The powersupply is of the conventional type,

BY CHARLES FELSTEAD ASSOCIATE EDITOR



as may be seen by reference to the accompanying diagram. As in all other portions of this amplifier, it is well to use high-grade parts in the power supply. Best and most consistent results are secured only when such parts are used. Economies in cost are often expensive in results.

The power transformer, particularly, should be of rugged construction. An over all secondary voltage of at least 750 volts is desirable; and the transformer should have a rating of 100 watts or more. The three filament windings—two for the tubes in the amplifier and one for the rectifier tube—may be on the same core with the plate voltage winding; but it is better to have a separate three-winding filament transformer so that the core material of the plate transformer will be less heavily loaded.

The windings on the filament transformer should be rated at 2.5 volts and 5.0 amperes for the three type —56 tubes, 2.5 volts and 8.0 amperes for the two 2A3 tubes, and 5.0 volts and 5.0 amperes for the rectifier tube. The voltage ratings must be exactly as specified; but the amperage ratings given are the minimum and it will be better if they are exceeded.

It will be noted that the center tap of the 2.5 volt winding for the type—56 filaments is connected to the common ground point of the amplifier. This may seem unnecessary since the tubes are of the heater type, but it is done simply as a precaution to eliminate the possibility of any A-C hum in this portion of the circuit not being grounded out.

A triple eight-microfarad electrolytic condenser and two thirty-henry choke coils form the filter for the power supply. It is important that the choke coils be capable of carrying the total plate current drawn by the amplifier. The rectifier tube shown is of the 5Z3 type, but the less expensive type —80 tube will work almost equally well.

The "bleeder" across the power supply, marked R_b in Figure 1, should be a 15,000 or 20,000 ohm wire-wound resistor rated at about 50 watts. In case the output voltage of the power supply is in excess of the desirable value of 300 volts, it will be necessary to connect the plate return leads from the amplifier tubes to points on this bleeder that provide the correct plate voltages for the tubes. A high-reading voltmeter will be of assistance in finding the proper points for connection to this resistor.

High-Power Output Amplifier

Although in the several preceding chapters we were concerned only with the three-stage basic amplifier, it will be well to expand this final chapter to include the design of a high-power amplifier

(Turn to Page 22)

TELEVISION

Don Lee Holds First Public Demonstration of High-Definition in the Nation

By THE EDITOR



CULMINATING several years of pioneering experimentation, a television receiver that is believed to have achieved a new peak in the clarity of the image transmitted, has been perfected by Harry R. Lubcke, Director of the Television Division of the Don Lee Broadcasting System.

cathode-ray tube receiver was witnessed on Thursday, June 4, 1936, by radio editors and other press representatives of metropolitan Los Angeles.

Justly proud of the achievement in the field to which he has consistently given every possible encouragement and support, Thomas S. Lee, president



Mr. Bernard H. Linden, Inspector in charge Federal Communications Commission, 11th District, at the controls of Don Lee television receiver. The receiver is on a black platform for viewing while standing. Off the platform the image is the correct height for viewing while seated in the usual easy chair.

Mr. Bernard H. Linden, Inspector in charge Federal Communications Commission, 11th district, inspects the Don Lee Television Transmitter W6XAO. He is shown at the side of the radio frequency portion, which serves to put the television images "out on the air." Looking up at the television antenna for the Don Lee Receiver. It consists of two five-foot one and thirteen-sixteenth inch long copper tubes separated by an insulator and connecting each to one wire of the two-wire rubber covered feeder shown leading around the corner of the building. This installation may be copied for home receiver use.

The public sees television. A group of persons about to view a television program as given in the special demonstration booth on the main floor of the Don Lee Building, Los Angeles. The receiver is at the right, as is Television Engineer, Everest, who explained the workings of the device to those interested.

The candid camera (A Contax) catches a mixed group looking at an image. Note the attentive look, particularly on the faces of the men.

Simultaneous with the announcement of the new instrument's completion came the word that the Don Lee experimental television station, W6XAO, would immediately expand its regular daily schedule of broadcasting. Demonstration of the transmitter and

of the Don Lee Broadcasting System, announced that, beginning Friday, June 5, the receiver, which has been perfected by the Don Lee organization, would be available for inspection by any and all interested persons.

After demonstrating to the press, Director Lubcke left Thursday night, June 4, for Washington, D. C., there to attend conferences and hearings which were conducted by the Federal Communications Commission on June 8 and 15, respectively. He testified as a representative of the Don Lee Television Division, outlining in detail the conditions regarding television in Southern California.

Something of the significance of the event is evidenced in the fact that this is the first public demonstration of high-definition television ever conducted in the United States. These public demonstrations observed the following daily (except Sunday) schedule: 3:00 to 5:00 P.M. P.S.T., 6:30 to 8:30 P.M., P.S.T.

During these periods, thousands of interested persons were given an opportunity to both see and hear the sight-and-sound television, as newsreels and short subject films were reproduced for both the eye and ear. In the interests of convenience, the instrument is located at the Don Lee Building at Seventh and Bixel Streets.

This high-definition equipment, only recently perfected by Director Lubcke and his associates, is the culmination of experimental and test work begun in 1930, conducted for the most part behind closed doors. Television transmissions have gone out from W6XAO since December, 1931, the images being received over the air and not by means of wires. The test period for the new equipment has occupied the past year. No announcement of this activity was made.

The receiver is of the self-synchronized, cathode-ray tube type, developed by Mr. Lubcke and first proved by him on May 21, 1932, when television images were for the first time in history received in an airplane. The receiver and system in general, are based on his patents. The equipment and principles involved are a departure from those of other television investigators and represent the Don Lee Broadcasting System's contribution to the progress of the art.

The receiver consists of the cathode-ray tube unit; two scanning sources; the television receiver proper, and the power supply. The television receiver proper serves to convert the television ether waves into electrical pulsations which are properly reproduced on the cathode-ray tube screen with the co-action of the scanning sources. Only four knobs appear on the front panel.

The images are composed of 300 lines and are repeated 24 times per second. This is a far cry from the 45, 60, or 80 line television of the past.

The television demonstrations have been available to the public since their inception. In order to control the size of groups witnessing each demonstration, attendance is now, however, restricted to holders of tickets which may be had for the asking at the Information Desk of KHJ, second floor of the Don Lee Building at Seventh and Bixel Streets. Out of town residents or those who cannot conveniently call at the Don Lee Building, may secure tickets by addressing a stamped, self-addressed envelope to The Television Division, Don Lee Broadcasting System, 1076 West Seventh Street, Los Angeles, California.

During the course of these demonstrations, showings were conducted for many special groups. First, naturally, radio editors of newspapers in Los Angeles and vicinity were invited guests. Subsequently, Bernard Linden, inspector in charge of the Los

HARRY R. LUBCKE



Angeles office of the Federal Communications Commission; delegations from every major motion picture studio; managing editors, and city editors of local newspapers viewed the images. Visiting scientists, some of international repute, were also accommodated.

While revealing that ready-made television receivers are not yet available for the reception of any television broadcast in the United States, Mr. Lubcke had encouraging words for the skilled amateur constructor. Instructions as to how to construct a receiver for seeing the images broadcast by W6XAO, the Don Lee television station, are made available to those who manifest an interest at the demonstration, or who send a stamped, self-addressed envelope to the Television Division. A resume of this information follows:

The Don Lee television transmitter W6XAO operates on the ultra-high frequency of 45,000 kilocycles (6 2/3 meters) daily, except Sundays and holidays, starting at 3:00 P.M. and at 6:30 P.M. Voice announcements concerning the broadcast are made at the beginning and end of each transmission.

For receiving the voice announcements of W6XAO and for preliminary experiments, any type of receiver which will tune to 6 2/3 meters may be used. Receivers designed for 5 meter amateur work are suitable when provided with larger coils. Install coils with 50 per cent more turns and remove one turn at a time while tuning for W6XAO. A simple line image of constant intensity is broadcast for a short period of each schedule, and an appreciable change in its strength after a change in the circuit or operation of a receiver is a direct measure of the effect of the change.

The image broadcast is a 300 line, sequentially scanned picture, with a frame frequency of 24 per second. For receiving these images the receiver must tune very broadly and should be of the superheterodyne type, with band-pass intermediate frequency transformers arranged to operate on an intermediate frequency of approximately 8,000 kilocycles. The RCA 954 or 955 "acorn" tubes are recommended for use in circuits carrying ultra-high frequency radio energy, except for the first detector of a superheterodyne receiver, where the metal tube

(Concluded on Page 23)

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Science Steps Into Optics

By EARL THEISEN

Associate Editor, International Photographer

Honorary Curator Museum Los Angeles

384-322 B. C.—Aristotle knew of the phemonema of light rays involved in the camera obscura.

100 A. D.—Pliny recorded the atmospheric influence on metallic silver.

1214-1294—Roger Bacon described in his "Perspectiva" (1267) what may have been the images of a camera obscura.¹⁴

1452-1519—Leonardo da Vinci described the camera obscura, not making any claim to the invention. (The camera obscura is a darkened chamber having a small hole (pin hole) through which rays of light are admitted to a suitable surface for receiving the image.¹)

1521—Caesarino, in a manuscript of this date, mentions the camera obscura in which he gave credit for its invention to a Benedictine monk named Don Papruito.

1521—Maurolycus, a mathematician of Messina, in a manuscript written in 1521, but published in 1611, described the subject of the camera obscura mathematically.

1556—Georgius Fabricus recorded that crude horn silver darkened in sunlight after bringing from a mine.

1540-1615—Battista della Porta described the camera obscura in his "Magia Naturalis" (1558) as his own invention. In his second edition (1591) he described the camera obscura using a lens.

1568—Daniello Barbaro published in "La Practica della Prospettiva" an account of a camera obscura having a lens and using stops. This is thought to be the first published account of a camera with a Plans-convex lens.

1585—Giovanni Benedicetti refers to a camera obscura with a lens.

1591—Porta published a second edition of "Magia Naturalis" describing the use of a lens on a camera obscura, evidently believing it his own invention. "If you put a small lenticular crystal glass to the hole you shall presently see all things clearer, the countenances of men walking, the colours, garments and all things as if you stood hard by; you shall see them with so much pleasure that those that see it can never enough admire it."²

1611—Johann Kepler, the astronomer, in his "Dioptrice," dealt with the optics of a camera and suggested in a letter to Sir Francis Bacon the use of the camera obscura as an implement for tracing landscapes. This was suggested also in the earlier works of Porta and Barbaro. Many of the early artists used this means to obtain outline sketches.

Records of Light Chemical Reaction

1727—Johann Schulze by chance discovered the action of light upon a solution of silver nitrate (the photo-chemical medium today). His discovery fol-

lowed experiments in making a phosphorescent substance. He cut out stencils of words and wrapped these around bottles of the nitrate solution and put them in the light. The light passing through the cut-outs reacted on the silver and turned it black, resulting in a liquid photographic impression. Of course, these liquid images would not make a permanent record.³

1763—Dr. William Lewis repeated the Schulze experiments and coated ivory and wood with silver nitrate in an attempt to make a photographic image. He also discovered that mercury solutions were sensitive to light.

1777—Carl Wilhelm Scheele exposed a prepared silver chloride surface to a solar spectrum and found that various colors had different actinic qualities. The violet darkened in fifteen seconds, while the green required thirty-seven seconds. He discovered the formation of metallic silver in the photo-chemical reaction.

1790—Thomas Wedgwood is generally believed to have started his photographic experiments and obtained results in photo-printing on sensitized paper. There is a link between Wedgwood's work and that of Lewis because Wedgwood had a series of notebooks written by Lewis covering his experiments. In 1802 Wedgwood published his process of recording objects by the action of light in the Journal of the Royal Institution in collaboration with Sir Humphrey Davy. He described a method of photo-printing by coating various materials and the formation of the image. He also mentions in the paper that no successful method of fixing the image had been found, although they tried washing and varnishing, which, of course, was not successful because it did not destroy the sensitiveness of the medium.⁴

1800—Herschell discovered the heat rays beyond the visible red.

1801—Ritter discovered by photographic means the ultra-violet beyond the visible spectrum.

Deviation from Evolution of True Photography

Having Indirect Influence on the Progress of the Art

1814—Joseph Nicéphore de Niepce (1765-1833) made images with bitumen on metal plates. Although successful images were made, these experi-

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ments are to be classified in the evolution of printing processes and not in the true lineage of photographic processes. His idea was to make prints as in photo mechanical printing processes.

1824—Louis Jacques Mande Daguerre (1787-1851) began experimenting in fixing camera images, using polished silver plates. His successful Daguerreotypes of 1839-54 did much to popularize photography. In January, 1839, he discovered the Latent Image, and announced his results through the press on January 7 and 14, 1839, but kept his process secret. On June 15, 1839, his process was announced through the French Chamber of Deputies.

The Daguerre process had the disadvantage of being able to make only one picture with each exposure. This method consisted of exposing an iodized silver plate and developing the latent image with mercury vapor.⁵

1833—First Photographs. Fox Talbot (1800-1877) commenced his photographic experiments and in 1835 had successful pictures fixed with salt (sodium chloride). His first pictures were of leaves and ferns made by laying them on sensitized paper. In August, 1835, he photographed his home, Lacock Abbey, copies of which can be seen in his "Pencil of Nature." His first experiments were conducted independently of the published processes of earlier attempts of others, of which he later became aware. On January 25, 1839, Talbot's "Sun Pictures" were exhibited by Michael Faraday at the Royal Institution. On January 31, 1839, he sent a paper describing his methods to the Royal Society on Photogenic Drawing. On February 8, 1841, he patented the "Calotype" (Beautiful Pictures) process, also known as Talbotype, after having discovered the latent image in September, 1840. The discovery of the latent image decreased the exposure a "full hundred times."

In 1844 the words, "positive" and "negative," were used by Fox Talbot for the first time in connection with photography in his "Pencil of Nature." He found the dry sensitized paper not as sensitive as when moistened.

1837—On June 24 Bayard worked out a direct positive system, using silver nitrate and fixing with potassium bromide.

1840—On March 31 J. W. Draper took the first portrait (by Daguerreotype) now in existence; probably earlier ones were taken but none preserved.⁶

1840—Sir John Herschell flowed a silver salt on glass, but did not use a sustaining emulsion support. He also introduced "hypo" for fixing and was the first to use the word "photography."

1841—Voigtlander introduced the famous Petzval portrait lens.

1848—Niepce de Saint-Victor, a nephew of

Niepce, first used a film of albumen emulsion on a glass support on which he brushed his sensitive salts.

1848—Frederick Scott Archer experimented with a wet collodion process. He published his process of sensitizing iodized collodion and exposing wet in "The Chemist" in 1851. This process was popular until about 1860 as the "wet-plate" process when albumen emulsion replaced the collodion. Gelatine gradually replaced the albumen from 1880 until its entire elimination in 1890.

1853—Introduction of many forms of collodion positives backed by varnished surfaces or velvet known as "Ambro-Types."^{7, 8}

1854—Gaudin attempted to use plate in dry state.

1854—Spencer and Mehuich patented a daylight loading roll holder of sensitized paper bands.

1855—Poitevin patented a chromatized gelatine printing process to which pigments had been added (in 1839 Ponton had discovered the action of light on bichromate).

1855—Taupenot introduced a method of iodizing albumen which could be dried and still retain sensitivity.

1855—Parkes patented a transparent celluloid support for a sensitive photographic coating.

1868—W. H. Harrison published his results of making silver bromide emulsion in gelatine. He used an alkaline developer.⁹

1871—Dr. R. L. Maddox published a formula for preparing a dry plate of gelatine emulsion sensitized with silver bromide.

1873—William Willis, Jr., took out the first patent on a platinum printing process.

1874—Liverpool Dry Plate Company introduced the first paper coated with silver bromide for positive printing. Many others followed after 1880.

1877—J. W. Swann placed dry plates on the market. (In 1846 Swan had introduced the carbon printing tissue and in 1874 Sawyer introduced a flexible support for the carbon process.)

1878—Charles Bennett introduced a process of cooking gelatine to increase its sensitivity.

1879—Monckhoven perfected the cold ammonia process for increasing sensitiveness of the photographic emulsion.

1880—George Eastman commercially introduced dry plates in the United States.

1884—John Carbutt coated thick sheets of celluloid with photographic emulsion.

1884—A. L. Henderson demonstrated to the Society of Amateur Photographers a process of making gelatine bromide emulsion.¹⁰

1889—George Eastman introduced sensitized gelatine on a thin celluloid support.¹² In 1891 he submitted a daylight loading system using celluloid rolls similar to the present. In 1903 the Eastman non-curling gelatine coated back was introduced.¹³

1893—Alfred Watkins introduced the factorial development system.

1893—First gaslight paper introduced by the Nepera Chemical Company from the formula of Leo Baekeland.

1895—In August, Eastman introduced the first motion picture positive raw stock in 100-foot lengths. Prior to this time the motion picture experimenters used the negative stock for both positives and negatives which had been patented by Eastman in 1889.

1905—Thomas Manly introduced the Ozotype process.

(Turn to Page 24)

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IN EFFECT SEPT. 1, '36
RESEARCH COUNCIL STANDARD 2000'
RELEASE REEL FOR 35 MM. MOTION
PICTURE FILM

Subject

These specifications describe the construction of a release reel to provide suitable mounting, during shipment and projection, for 2000 feet of standard 35 mm. motion picture film. The attached Research Council Drawing entitled "Standard 2000 Foot Release Reel for 35 MM. Motion Picture Film" shall be considered a part of these specifications.

Size

The reel shall have an outside diameter of $14\frac{1}{2}$ inches, a hub diameter of 4 inches, and an inside clear width of $1\frac{1}{2}$ inches. The center bushing shall be of such size as to provide an easy fit on all standard $5/16$ inch diameter rewind and projection machine spindles, and shall have a $\frac{1}{8}$ by $\frac{1}{8}$ inch key-way.

Construction

The reel shall be constructed of No. 24 USS gage [.025"] (except the hub which shall be constructed of No. 20 USS gage [.0375"]) with rib heights and rolled edges of dimensions as shown on the drawing except that thinner gages and slightly greater rib heights may be used for economy of construction, provided such design makes up into a reel of equivalent stiffness in the flanges to the one of specified dimensions. A thin gage which might permit denting of the ribs during use but which at the same time would maintain the essential working dimensions of the reel would be acceptable.

An access hole for threading shall be provided in each flange adjacent to the film slot, having a minimum diameter of 3 inches, and located as shown on the drawing. The number, size and position of lightening holes in flanges is not specified other than that they must be of such number and position to

provide an acceptable running balance.

The reel shall be entirely free from raw edges on all portions which come in contact with film or the hands. The edges of all hand openings shall be turned and flattened and the outer edge of flanges shall be rolled. Flanges shall have an embossed spot near the periphery, opposite the opening adjacent to the threading slot, as shown at "A" on the drawing.

Reel flanges shall have a sufficient area of flat contact surfaces on the inside to provide ample bearing for the edges of the film. Rib heights shall be slightly less than the height of the peripheral rolled edge to allow for stacking. All flanges shall be free from warping or buckling after assembly and shall run true with $1/32$ inch when the reel is spun on a $5/16$ inch shaft.

Center bushing shall fit solidly into side flanges without looseness when assembled, and shall be of sufficient strength to withstand the wear and tear of usage. Clinching ears shall fit tightly and shall be pressed down firmly so as to make a solid assembly of the reel and to insure at all times a $1/16$ inch slot for threading the film end into the hub.

Materials and Finish

Material shall be steel with anti-corrosive plating or coating, or non-corrosive alloy. Finish shall be suitable to protect against the wear of use and against the corrosion of ordinary atmospheric influences.

Tolerances

To allow for the utmost freedom in design of the reel, maximum and minimum dimensions are indicated on the drawing wherever possible but where such values are not shown, the specific dimensions shall be strictly adhered to within the limits of good practice.

Cost

The total weight of the reel and its cost price must

be closely comparable to two first class reels of 1000 feet film capacity. Any cheapness in the reel made possible by weak construction shall be deemed unsatisfactory.

Undesirable Features

Any concentric grooving in the flanges which will permit layers of film to shift laterally shall be considered unsatisfactory.

Enamel or paint finishes are not recommended and unless they offer exceptional resistance to wear and chipping shall be considered unsatisfactory.

Any reel on which the plating or dipped finish cracks during forming or assembling shall be considered unsatisfactory.

Note

Manufacturers preparing standard reels meeting these specifications should take whatever precautions may be necessary to assure themselves that they are not infringing any existing patents which cover the features suggested in the specifications.



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There Are Cameras and Cameras

By KARL A. BARLEBEN, JR., F.R.P.S.

(Dean, New York Photographic Institute)

HAVE you got the photo bug? Seriously, I mean. If you have, you will appreciate the torments its victims are subjected to every time they see or hear of a new camera. I know, being possibly one of its most easily influenced victims, and I wish now that I had the money I have during the past twenty years spent on buying new cameras, trading in old ones for new ones and making swaps of all kinds. It is no exaggeration to say that I've owned practically every kind and type of camera available in the United States. Everything from the smallest, such as the Coronet, to the biggest such as 8x10 view outfit. It seems that I shall never learn, for as the years pass, I can't seem to overcome the itch to possess the new models which make their appearance from time to time. I have partially curbed the germ of camera possession, but not completely. Perhaps by the time I grow a long, white beard and have to get around in a wheel-chair, I may come to the point of quitting this insane mania for owning new models.

I've had my fling at motion picture work, news work, teaching and more lately, miniature camera photography, as many of you know. In the course of years I have been swept by the tides of photographic fashion. I've lived through the intense miniature camera craze, the home movie period and many others. Today I feel more settled, for I have gathered bits of knowledge from each as I've traveled down the road of photography. Should I make so bold as to predict that the trend is today towards slightly larger than miniature camera sized negatives? Personally, I now seem to favor negative sizes from 2½x3¼ and up to 4x5 inches. The industry will support my personal convictions, for it, too, will tell you that the small, true miniature sizes are slowly giving way to the somewhat larger sizes. There are many reasons for this, but we shan't go into them here. Suffice it to say that we have all learned a lot from miniature camera technique, and now, when working with larger sizes, we secure better results than ever before, all because we combine miniature technique with larger materials. A grand combination.

The point in question at the moment is: "What sort of camera most nearly suits the average requirements of the amateur photographer?" Whether you are yet to own your first camera or whether you are a bug like I am, makes but little difference. The result must be the same. As was previously indicated, the fashionable negatives of the present are roughly 2½x3¼ or 3¼x4¼ inches. We will assume, then, that a camera using this size negative material will be sought. The next consideration is one of cash. How much are you willing to invest in a camera? You can get cameras from a few dollars

to a few hundred dollars, and while it may seem economical to get inexpensive equipment, you will find out that, in the long run, it pays to invest in a high-quality outfit which will not only give greater flexibility but last ever so much longer.

The recently introduced import duty and taxes has increased the imported class cameras considerably, and you may not feel justified in spending what they cost at the moment. The next course is to investigate domestic outfits, and, sad as it may seem, the fact is that very few are what we can call high-quality. There are, of course, a few, about which more later.

Next on the list of considerations is the kind of work intended—upon this consideration depends everything if you wish to be happy with your new camera. In short, it must be of a type which will perform most of your work satisfactorily and easily. This is difficult, for as is well-known, no one camera can be said to be truly universal in its applications. Each camera is designed to excel in one or more specific types of work. Just as the miniature camera with a speed lens cannot be beat for straight candid work, the aerial camera has no peer when it comes to air conditions and the studio camera is best for studio portrait work, so with every other camera. True, all may be used after a fashion for practically everything, but not saying anything about the impracticability and inconvenience involved. So it is first necessary to determine roughly the type of photography to be done. Then the camera should be matched to the work, and all will be well.

From personal experience, I am prompted to remark that the Graflex and Speed Graphic cameras, as offered by the Folmer Graflex Corp., stand quite alone as far as versatility and accomplishment are concerned. These domestic cameras are, when compared to imported makes, most reasonable in price. They offer perhaps more value, dollar for dollar, than most outfits. If you're interested, let's examine the facts.

These cameras have been in use for more than twenty years. In fact some which left the factory

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fifteen, eighteen and twenty years ago are still in active duty. This seems that they "have what it takes." Their background is of the best. You know of course that newspaper photography is, without question, the most trying and difficult type of photography. It demands satisfactory results regardless of conditions. It is interesting to note that about ninety per cent of all staff news cameramen use Speed Graphics of the 4x5 size. The others use Graflexes, also of 4x5 size. This fact should serve to conclusively indicate that where a sturdy, workable camera is wanted, the Graphic and Graflex cannot be beaten. Some years back, the news boys took over a popular 4x6 folding camera of excellent make. While it served most of their purposes, it was found to be lacking in ruggedness among other things. Back they went to the Graphic, and from all appearances, they'll stay with it henceforth.

But ruggedness is not the only qualification demanded by the serious photographer of today. He wants precision, quality and flexibility. Here again I can only point to these two fine cameras as examples which embody the needed requirements. Ever since the Folmer Graflex Corporation issued the Speed Graphic in the 3¼x4¼ size, the demand for it has been startling. Surely this means that this size negative is one of the most popular. Pictorialists, scientific workers, news cameramen and amateurs are now using the small 3¼x4¼ Speed Graphic for the bulk of their work, while the news boys and amateurs who require a larger size, use the 4x5 Graphic. One interesting advantage the 4x5 negative has, is that it takes only a two times enlargement to make an 8x10 print.

The Graflex, of course, has always been popular with photographers of all kinds. Its ability to focus right up to the moment of exposure makes it ideal in all cases where the subject is moving about—such as when photographing children at play, pets and the like. The reason some people don't like it is due to its bulk and weight which are of necessity involved to house the reflecting mirror focusing arrangement. To those where bulk is unimportant, it makes an ideal outfit. The Graphic of course is small and compact, and is therefore the choice of many, especially when traveling or where luggage must be carried by hand, as in mountain climbing.

No camera can claim to be truly universal unless

it offers a great range of shutter speeds. Take the Speed Graphic, for instance. The focal plane shutter gives speeds from 1 to 1/1,000 second exposure. If this range is not enough, a Compur shutter can be installed with the lens. The customary automatic shutter speeds of the Compur are then available in addition to the speeds of the focal plane shutter. Most news cameramen have both types of shutters on their Graphics for while the one serves for some purposes, the other serves for a new set of purposes, thus practically anything can be successfully coped with when using the two types of shutters.

With all due respect to range finders, many still prefer the old-fashioned ground glass screen to not only focus, but compose the subject. The Graflex offers this means of focusing ideally, and the Graphic gives the convenience of ground glass focusing with the ease of a view camera, but without the inconvenience of the bulk of the latter. This is a revelation, for with most hand-cameras, it is necessary to completely remove the ground glass back before the plate holder can be inserted. The Graphic focusing back merely is pushed backward and the holder inserted, as with view and similar cameras.

In serious work, it often becomes necessary to change lenses at will—and with the minimum of effort and lost time. Both the Graflex and Speed Graphic permit this with the greatest of ease. Last but not least, they are available in several sizes, making it possible to enjoy the popular features in a variety of negative sizes. Most popular, as has been noted, are the 3¼x4¼ and 4x5 sizes. These are small enough to be economical, yet large enough to produce first class quality work of a professional order. Then, too, the negatives permit any local alteration to be done on them, such as retouching, etc., without making a day's work out of it.

Now that I have confessed my weakness for good cameras, it is only fitting that I conclude by saying that in the past I've had two Speed Graphics and three Graflexes. Today, among my collection, stands a 4x5 Speed Graphic. In short, I've completed the cycle of photography, and have come back eventually to the equipment which years of experience and common sense tells me is about the best all-around outfit for my varied photographic activities.



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Newsreelers Live Ten Days on Salt!

By FRANK W. VAIL,
Local 659, I.A.T.S.E.



Left to right, standing: John Olson, Fox; Joe Rucker, Paramount; J. McHenry, Universal; Frank Vail, Pathe. Seated, left to right: Frank Lowery, Paramount; Captain George Eyston.

QUITE a diet, even though the salt was not taken as food. With a nice "two" day assignment to cover the auto speed runs of Captain George Eyston, British speed ace, on the salt flats at Bonneville, Utah, the news-hawks arrive—but, not alone.

Old Man Weather, an uninvited guest, blows in. Five days of assorted storms, including rain (light, medium and heavy), a salt storm (just like dust with a sand blast finish), a plague of "Mormon" crickets (every male cricket had at least two million wives), a hurricane (which brought thunder and lightning), a miniature aurora borealis (a beautiful prelude to the finale which consisted of, a cloudburst (generous size helping).

During the above described demonstration, Eyston's tent at the pit—a huge affair—was blown down and re-erected with true British determination at least twice daily. Nice cut-in shots but monotonous with repetition. Our evenings were spent at the State Line Hotel—good food—and a nice \$30,000 Diesel-powered lighting plant (cunningly hidden beneath the cameramen's quarters) purred us to slumber—after about three nights of no sleep.

Reminded us of another story—"the Army's 400 planes in the air at one time"; noisy till one got used to it. But, back to our speed yarn. After Mother Nature had restored some sense of stability to the weather, there still remained the small item of an inland sea covering the course with three inches of water. Evaporate? Not for weeks. Soak in? Not for months. What to do!

In desperation Captain Eyston's crew broke out a flock of brooms and commenced the herculean effort of drying the track by muscle power. "Time Marches On," but the track stayed wet. Eight days had passed and the patience of a newsreel gang was tried. Then, the masterful idea was born. A car carrying Jack McHenry, of Universal, and Frank Vail, of Pathe, streaks across the salt and disappears.


In three hours they are back with a fourteen-foot length of six-inch diameter steam hose, swiped from

a roundhouse. Joe Rucker and Frank Lowery, of Paramount, catch on quick, and rush across the salt flats dragging two huge timbers, accompanied in true W. P. A. fashion by Johnny Olsen, of Fox, carrying the inevitable red flag. The hose is split in two lengthwise and nailed to the boards.

English mechanics stand aghast. The cameramen's patent is complete—a giant squeegee! A moment of anxiety as it is hooked onto a fast truck, will it work? The truck gets up speed, 20, 40, 60 miles per hour—a great fan of water is thrown far to the side.

Round and round she goes and in four hours the track is dry and ready. Radio Station KSL puts its short-wave station on the air; Captain Eyston steps to the mike and a nation-wide network carries his story of the "Cameramen's Patent." The rest of our tale has been told, over 60 world's records smashed, New York has our negative—just another story has been "covered" by the newsreel men!


The irrepressible Merle La Voy, war news-reeler on seven fronts, traveller in all parts of the earth and at present shooting backgrounds throughout Africa, is still among the lost on the Dark Continent, but his friends fully expect him to appear soon with an elephant under one arm, a lion under the other and followed by a thousand or more backgrounds—**alive!**



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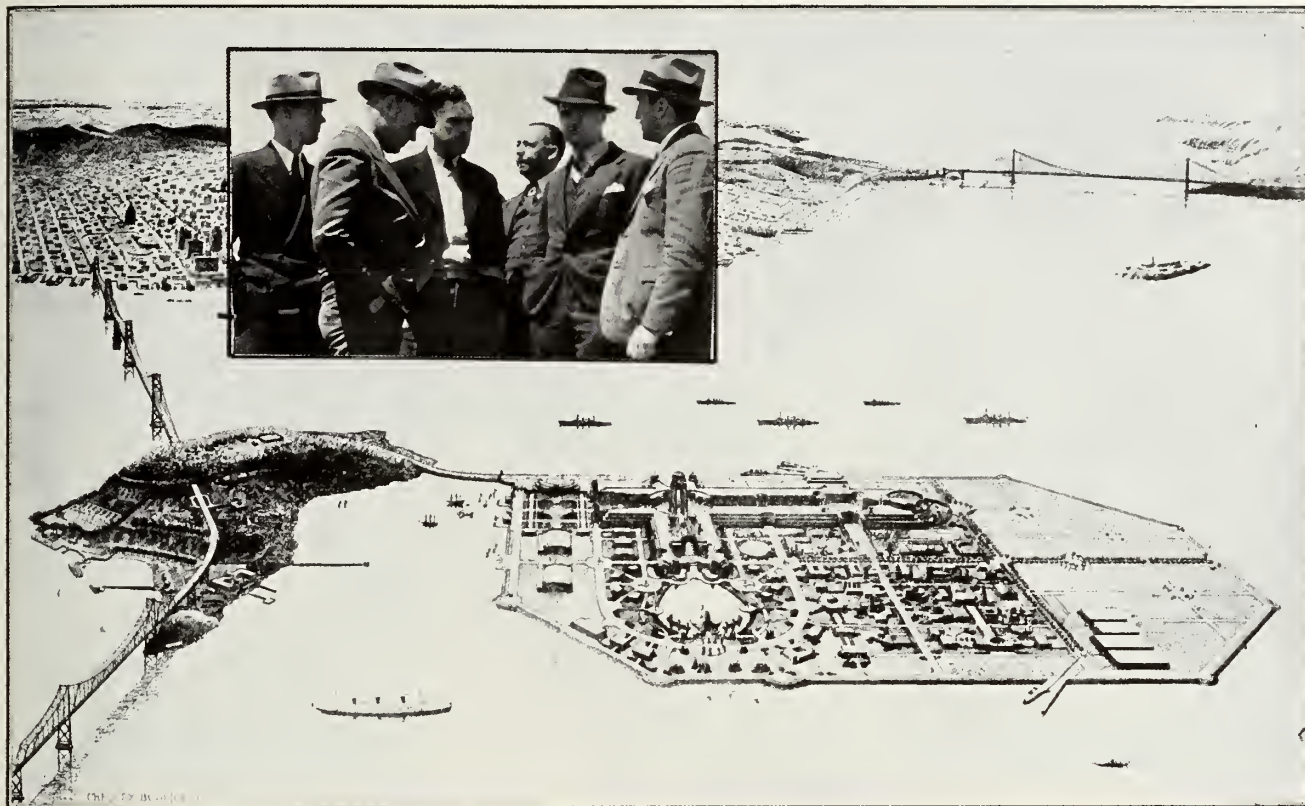
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A Forty Million Dollar Show

Official newsreel cameramen of the San Francisco Bay region are laying plans for their first assignment on the ground-breaking ceremony for the

Fair on the Exposition Island, lying directly between the world's two largest bridges, spanning San Francisco Bay.



Golden Gate International Exposition, to be held on a man-made island in the center of San Francisco Bay in 1939.

Civic leaders, representatives of foreign nations and exposition officials gathered August 21, to start the construction program for the \$40,000,000 World's

Newsreel representatives of the first Exposition job include Frank Lowrie, of Paramount News; George Lyng, of Hearst Metrotone; Eric Mayell, of Fox Movietone; Frank Vail, of Pathe, and Jack McHenry, of Universal News.

The De Kay Continuous Movement

By WALTER BLUEMEL



LMOST since the beginning of motion pictures, engineers and mechanics have been trying to develop a successful continuous movement for motion picture cameras and projectors, but the fact that at present there is on the general market no film movement which takes or projects steady pictures while the film is in continuous, non-intermittent motion indicates the difficulty of this problem. The advantage of such a movement may at first not seem sufficient to warrant any great effort and expense to perfect one, but that recently developed by Robert De Kay will show where these advantages lie.

In all continuous motion picture machines, whether camera or projector, it is necessary to photograph or project each single picture while the film is in uninterrupted motion. Since the lens must naturally be stationary, this can be accomplished successfully by oscillating like a balance a mirror or prism in such a way that, in the projector, the mirror reflects each illuminated frame while it is moving down a space of two frames, then returns to pick up the next frame to continue the cycle. The same procedure is

followed in the case of the camera, except that the direction of the light is reversed, so the projector will serve here as an explanatory illustration. The speed of oscillation of the mirror must be such that the reflected light is absolutely steady and can be projected through a lens.

If the oscillation is not in perfect synchronization with the movement of the film, a blurred image will result on the screen. It is obvious, therefore, that the essential feature of this type of continuous movement is the mirror and the way it is oscillated. It takes the place of the pull-down mechanism of intermittent machines, but since the mirror is only a little larger than a standard motion picture frame and vibrates in a small arc, less power is needed to operate it, and the wear on the movement and film (there being also no registration pins) is considerably less. Since wear means noise, this type of movement is quieter, depending, however, on the construction of the movement.

In the De Kay movement practically all the diffi-

(Turn to Page 28)

(INTERNATIONAL PHOTOGRAPHER desires to increasingly serve the professional photographer as his TECHNICAL CLEARING HOUSE, as it were. This magazine also desires to be of practical service to the amateur photographer, art lovers and to all those aspiring to some branch of the motion picture industry, including actors. Hence, from time to time authoritative articles directed to this end will be presented.

Due to the interest aroused by the article in last month's issue entitled, "Into Pictures—Through Pictures," by the new screen character actor, John Van Pelt, INTERNATIONAL PHOTOGRAPHER has again asked him for a statement, drawing on his early experience in the entertainment field as character impersonator and singer, which was followed by a business career as community builder and now again as actor.

Since the coming of talking pictures the motion picture actor's tendency has been to increasingly rely on voice and less on pantomime. The following article stresses the much needed study of the face in all photography.

For the purpose of illustration these four studies of Mr. Van Pelt have been taken of one of his recent characters, Will Bannister, in "Island Captives." To study the eye expression separately it is suggested that the reader cover the lower half of the face in each picture.—Editor's note.)

WHAT is this thing we call personality? It's like trying to define God or Love. We feel the force, but can't touch nor see it. It is not enough to say it is the sum total of individual characteristics, intensity, vitality and technique. What is it? That nameless something which attracts or repels; is it mental force, sex, appearance, or a combination; is it accidental, can it develop, is it constant?

To what degree does photography reveal true and complete personality? Have you developed a technique for finding it? Are you the most likeable and effective personality **yourself**?

WANTED: ARTISTS SEEING GOOD IN CONTEMPORARIES

We use the word personality in many ways, general and specific. It is an element we all have to some degree, though our technique may be good, bad, or minus. It is a relative factor. Why do some individuals tower mountain-like above their fellow-men? Is it brains only?

Personality includes the qualities of **RESPONSIVENESS, INTEREST and CONVICTION**. It may be divided into the following types, or their opposites, according to which one of these elements predominate:

- (1) The Fine Personality—responsive, sensitive, fine grained.
- (2) The Charming Personality—likeable, showing sincere interest in you and creating your interest.
- (3) The Forceful Personality—having the courage of his convictions.
- (4) The Great Personality—including all of the above qualities in large degree. The great personality should be one's goal.

We inherit traits which largely stamp us as to personality type. However, it takes plenty of living for personality to "blossom." Effective personalities do not happen—they grow, and with life's events become more vital in proportion to capacity.

Effective screen personalities often remain hidden

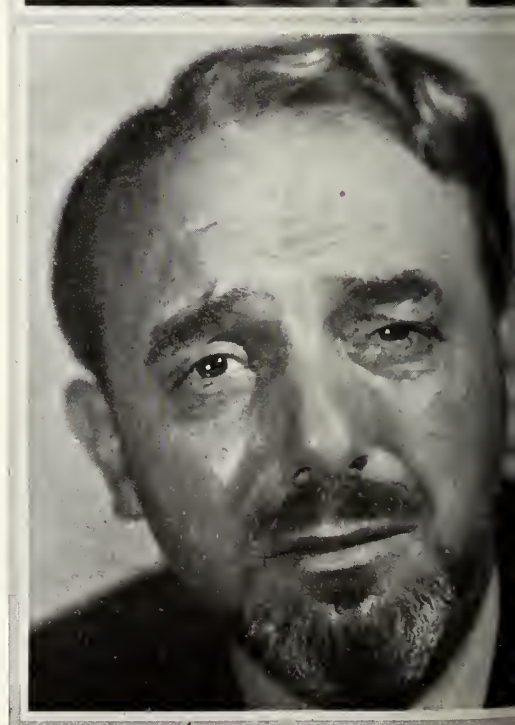
"THE EYES"

(Ocular Expression)

By J. I.

or subdued for some cause. This is the studio talent scout's job to find them and they search far and wide. The greener pasture, the enchantment of distance or New York glamour is inclined to dim the fact that talented personalities by the hundreds have been sent from over the world and are here at the studio doors waiting for opportunity.

Like moths in the night they come by the thousands each year to the bright lights. Their great number, each demanding attention, makes selection all the more confusing.



John Van Pelt as Will Bannister

HAVE IT"

's Personality)

ELT

The puzzle is to discover those few out of the thousands who are worth investing in; those who have talent or effective screen personality; those who photograph; who have sufficient physical endurance, ambition, sincerity and character.

My sympathy is with the casting directors who have the responsibility to solve the puzzle, to cast truly in spite of the numerous handicaps. The public holds the final verdict.

There is what one might call PERSONALITY TECHNIQUE—which is intelligent, permissible, nec-

essary and applicable—to be able consistently to interest and inspire an audience. It goes far beyond the label of "stage tricks." IT IS THE TECHNIQUE OF KNOWING WHAT THE FACE AND BODY ARE DOING, NOT MERELY LEAVING IT TO FEELING OR INSPIRATION. To learn this the **looking glass** is the **greatest teacher**. One must be able to know just how he looks from the feel of his face and body muscles. This takes hours each day before the mirror until mastered.

In a sense we should not trust our facial expression to our feelings, but rather to **knowing** what the face is doing—for the professional should not feel in the sense that a beginner does.

I know there are those who would refute this, but would it not be awful for a man to come into a murder scene every night, feeling murder in his heart? We don't feel only. We act from technique and the principle that we use is our facial expression of which the eyes are the dominant factor.

One says, "We have the person with the expressive face"—what does that mean? It means that the expressive face is following every emotion, not only the person himself, but also of the person who is singing or speaking. Would you expect your audience to use facial expression when you do not use it?

We read the emotions of people by watching the expression of their eyes. When we are unconscious of ourselves, it is almost impossible to control the eyes to keep them from expressing our emotions.

The mother illustrates this when she says: "Now, look me right in the eye, Johnny; are you telling me the truth?" She knows that the boy is not sufficiently skilled to conceal the truth from his ocular expression.

If I want to find out what a man is thinking, I look him in the eye. In acting I must make my eyes learn to express the same thing they do in private life. I must, therefore, study and find out how I use my eyes in everyday life and must use them the same way on the stage and screen and, unless I do, I can never hope to get over an emotion.

This is what we call **intensity** and **vitality** and we must take the word of the greatest dramatic critic, the late Charles Frohman, for it, that **vitality is the greatest asset an actor can have**.

Unless the actor controls his eyes perfectly he spoils the mental picture which is the object of his art. It is not done by any inspiration, but by the technique of knowing what the eyes are doing. This is one of the things that makes for success in any work, especially when our friends are not around to tell us how great we are.

Edwin Booth, John McCullough, Joe Jefferson, all have known the value of eye control, as do the great actors of the present time. You tell a narrative with your eyes, you give your characterizations with your eyes. When it comes to the part the eyes play in facial expression, it may be said that if you control your eyes the rest of the face will follow.

Associated with facial expression and eye control is the big word POISE, toward which relaxation is the first step. In order to hold and sustain scenes, to influence, to inspire your audience or client with the confidence that you know your business, you must have absolute control of every muscle of your body.

Poise does not mean inaction or passivity, nor does it mean paralysis through drink or dope, which is the false poise whereby many are handicapped and at untold cost to studio companies, as well as

(Turn to Page 24)



JOHN STILLMAN

Island Captives."



MOVIE SCENIC

By F. HAMILTON RIDDEL

PERHAPS the greatest incentive to the average filmer, for getting his movie camera into action, is the film scenic. Each year there comes that two weeks' restful pause, in the busy affairs of everyday life, when the whole family can be together and are able to get away for an automobile trip. It is the one time in all the year when Dad can make a film of which he has long dreamed.

In making preliminary plans for cinematography on the motor trip, a great deal will depend on the time allotted for vacation; that part of the country which will be visited; and the approximate footage one desires to devote to the movie scenic. Some planning beforehand is essential, if best results are desired, although naturally enough it will be tempered by individual requisites.

For the sake of simplicity, we shall say the scenic will necessitate in final screen form, including titles, about two reels. This means about 800 feet of 16 mm. film; or in the case of 8 mm. filmers, 400 feet. However, since you are to be away from a familiar source of film supply, it is most desirable in planning the movie to allow for unforeseen use of additional footage, as well as to allow for a certain percentage of mis-shots. For this reason, it is the better part of wisdom to take along some extra rolls of film.

While considering film, decide on the type you will use while away. Again it is a matter of personal choice, dictated more or less by the family budget, as to what type should be purchased. For consistently even results, irrespective of the film chosen, it is best procedure to standardize on and use only one type of emulsion. Jumping from orthochromatic to panchromatic, to super panchromatic and back again causes confusion for the family cameraman and will not make for consistent results. Since the film you are about to make will be improved by fades, and if you do not care to take along additional accessories to make them, users of the negative-positive film system will find it a simple matter to introduce fades at proper sequences **after** the negative has been processed. Those choosing reversal film should include a fade-glass, making the fades as the scenes are taken.

The simpler the equipment, it is most often found, the better will be the results. Aside from making fades, a great deal of trick accessories only add

to the cameraman's labors—and remember, he's on vacation! The main idea is to come back with **good** pictures, properly exposed and picturesquely photographed. Only a selection of filters is really needed. Filters take up little room and are simple to use, yet they improve many shots materially by adding additional beauty to your scenic.

Perhaps the most often used means for disclosing the progress of an auto trip, on the screen, is the animated road map. This medium for placing your action is most convenient, however, and plus the liberal use of road signs, interspersed between scenes, such inserts will add to your completed movie scenic. While you are at it, obtain two copies of the road map. The one which you will use on the "location" trip will become too worn from frequent use to be of practical photographic value when later you prepare your animated map. The latter requires spotless copy, of course, and can be made conveniently in the many handy titlers that are available.

A good mental continuity will help you to obtain an interesting picture. We say "mental" continuity advisedly, for there will be many changes made before your movie scenic is finally completed, which renders a written continuity valueless. It is well to shoot an impersonal continuity, including only enough of the family for human interest, but not enough to make it a "family affair." Later, when you come to editing your film, the wisdom of this advice will become apparent.

In your opening scenes, do not dwell too long on preparations for departure. A long shot, picturing the parked car, with a few significant close-ups, is sufficient. As the car moves away from the curb, a tripod-pam shot follows it to the center of the thoroughfare and on down the street into the distance . . . into a slow fade-out.

Once on your way, it is up to the cameraman to keep eyes peeled for interesting bits of action and for shots of beauty. En route, various close-ups can be taken inside the car; preferably when it is not in motion, to avoid camera jiggles. Close-up action will include turning on the car radio; close views of the occupants; hands at the wheel; references being made to the road map, and so forth. While you are zooming down a **smooth** highway, when there is a minimum of bumps, you can catch a few close shots of the speedometer. It is well to include several readings of the speedometer; such close-ups may come in handy later on when you're editing. Don't attempt right angle shots of the countryside from the moving car, as they will appear blurred on the screen. Very occasionally you can shoot straight ahead through the windshield (better if it is opened), employing your variable speed of 32 frames per second. Only a few shots taken in this manner, however, should appear in your final film assembly.

in filming the natural beauty encountered on

the trip, concentrate on the old rule: Go from long shot to close-ups giving particular details. A film consisting entirely of long shots is not pleasing, nor interesting. Vary your camera set-ups, including angles that will enhance the pictures. Remember, that in long shots, a sense of depth is imparted by foreground framing. This can be accomplished by the placement of long shadows in the foreground or with tree branches which serve to frame the shot. If no such accommodating tree branches are at hand, a member of your family can hold a branch

both human and animal. In some instances when obtaining views of people, you may have to resort to candid camera practice. Common as is the amateur movie camera today, its appearance never fails to invoke an unpleasant "posed" expression on subjects. The artful filmer will do well to avoid this, if possible.

The lure of cool, flowing water is always a refreshing subject. Filmed first in long shot, with subsequent use of various angle close-ups, the swirling water will paint its own inimitable patterns.



Left: Long shadows in the foreground. Center: The lure of cool flowing water. Right: Tree branches which serve to frame the shot.

a few feet in front of your camera, which will give the same effect.

When you come across beautiful skylines with soft clouds, don't fail to slip on your filter. It's the only means of securing breath-taking beautiful shots for the screen.

On the trip you will run across some amusing situations which, deftly pictured in a few well-chosen medium and close-up shots, will tell the story quickly and humorously. The recreational side of the trip should also be pictured. This may include swimming, diving, sailing, canoeing and horseback riding. The more agile the cameraman is in choosing camera set-ups, the more pleasing will be the variety of the shots.

Include inhabitants of the area which you visit,

Action, action, action is what you are after, therefore contrive to have it in every scene you make.

When the trip is over and all the rolls of it have been processed, then is the time to sit down and do a good editing job. Retain your original estimate of having the picture run two reels . . . and cut, cut, cut. Bolster continuity by proper scene timing and satisfactory titles, animated road map and road signs. Treat your film to a special art main title, and one for the end. Hold your sub-titles down to a maximum footage of ten per cent. Probably less title footage than this amount will be required, as the close-ups of road signs, plus the animated map, will do the job nicely. Tailored by proper editing and titling, your movie scenic will prove a pleasing picture, fit for the most discriminating audience.

CINEMA-TIDINGS

By F. HAMILTON RIDDEL

Amateur Motion Picture News
Eastman Exhibit at Texas Exposition

THE Eastman Exhibit at the Texas Centennial Central Exposition, located in the Hall of Electricity, has been attracting a large number of visitors since the Exposition opened June 6. The exhibit is devoted primarily to the interests of the amateur photographer, whose number among the visitors seems to be legion. Cameras, movie or still, are admitted free to the Exposition and picture-making is encouraged.

The exhibit shows a complete Eastman amateur line of cameras, accessories and photographic supplies. Many visitors are attracted as well by a salon of amateur photographs, which have won prizes in various competitions because of their hu-

man interest appeal. Here are also shown many examples of fine portrait and commercial photography. Many visitors also go into the air-conditioned theatre to see the daily presentations of motion pictures in black and white and in Kodachrome. Educational movies are shown in the main exhibit, supplementary to the theatre presentation. An experienced staff is on hand to demonstrate equipment to visitors and to show them how to make better pictures.

Kodachrome Announcement

Kodachrome film, popular with home movie fans, is now available for natural-color still pictures used in miniature cameras.

For the time being, according to announcement, Kodachrome for stills is limited to two sizes. Size No. K828 (8 exposures) is made especially for the recently introduced Kodak Bantam Special camera with fast F.2.0 Ektar lens; (see August, 1936, *INTERNATIONAL PHOTOGRAPHER*, page 19). K828 Kodachrome film is not suitable for use in the F.6.3



Kodak adjustable film tank.

and Doublet models of the Kodak Bantam, it is said, because the lens apertures of these cameras are not sufficient to give the exposure required in making snapshots. The other size, K135 (18 exposures) is ready for Kodak Retina and similar cameras.

Kodachrome provides natural-color transparencies with the ease of ordinary black and white snapshots. The full color transparencies can either be viewed in their original size by transmitted light, or projected in large form on a screen. For projecting, transparencies should be mounted in a 2"x2" glass slide. Glass slides, special works and varied colored binding tape are made available, also a card mount for hand viewing. If desired, the transparencies may be mounted in a 3 1/4"x4" slide. Special masks are also available for this purpose.

In preparation, and timed for early announcement, is a series of Eastman projectors especially designed for home or lecture showing of the transparencies.

8 mm. and 16 mm. Accessory Catalog

An interesting catalog on accessories for 8 mm. and 16 mm. Filmo motion picture cameras and projectors has been issued by Bell & Howell Company, Chicago.

Profusely illustrated, the 60-page catalog does not stop with description of equipment offered for sale; it also tells what various classes of equipment contribute to the movie user's art, and how they should be used for best effect.

As indicated by the table of contents, many new accessories are revealed in the catalog. The booklet is arranged in sections, each devoted to a related group of units. Fully 500 separate accessory items are listed.

A copy of the catalog may be had without charge by request to Bell & Howell Co., 1801 Larchmont Ave., Chicago, Illinois.

Kodak Adjustable Film Tank

Eastman Kodak Company has just announced the new Kodak Adjustable Film Tank for amateur use. In the dark-room exposed film is loaded into the tank, and thereafter the balance of the developing process may be carried on in complete daylight.

The most popular film sizes may be accommodated: 616, 116, 620, 120, 127, 828 and 135. The

change from one film size to another is accomplished by a simple shift of the upper flange from one notch in the flexible steel core to another. The tank is one-piece, stainless, acid-resistant steel and has a developer capacity of 32 ounces. For narrower width films, only 16 ounces of developer is required.

The tank cover and reel flanges are of durable molded material. The cover is designed so that the necessary solutions or rinsing water may be poured in or out through a light-trapped opening without removing the cover itself.

8 mm. Exclusively

The Film Specialties, El Monte, California, dealing exclusively in 8 mm. motion picture equipment, has announced a new series of film stocks. Introduction of various type emulsions is said to greatly increase the scope of 8 mm. movie making. Following is a partial list of 8 mm. films which Film Specialties is handling:

For use in double 8 cameras: 25 ft, with 30-inch leaders. On daylight-loading spools; processing and return postage included: (1) New Palomatic—non-halation, regular panchromatic stock, with Weston Rating of 12. (2) Palomar New Super Sensitive Panchromatic—non-halation, having all the best qualities of fast film, with Weston Rating of 24. (3) Palomar Positive—for making titles.

For straight 8 cameras only, using pre-split film: 33-foot lengths. Processing and return postage included. Following stock is not on a spool, but instructions are furnished for easy spooling. (1) Palomar Regular Panchromatic, with Weston Rating of 12. (2) Palomar Super Sensitive Panchromatic, Weston Rating 24. (3) Dufaycolor Film for natural color movies.

Other 8 mm. emulsions, including reversal and negative-positive film systems, are listed in Film Specialties' catalog, copy of which may be secured by addressing the company.

8 mm. Rental Subjects

Owners of 8 mm. movie equipment will be interested in seeing the new fifth edition Kodascope Libraries, Inc., film rental catalog, entitled "Kodascope Eight Library Motion Pictures." This 52-page booklet, with many pictures, describes the comedies, cartoon and features available for rental on 8 mm. film.

Featured in Kodascope 8 mm. pictures are such well-known stars as Wallace Beery, Mary Brian, Charlie Chaplin, Charlie Chase, Ricardo Cortez, Aesop's Fables, Felix the Cat, Laurel and Hardy, Harold Lloyd, Our Gang, Will Rogers and Lewis Stone. And that famous film of the West, "The Covered Wagon," is available for any 8 mm. projector.

Branches of Kodascope Libraries, Inc., are located in the principal cities of America, from which are obtainable these Kodascope 8 mm. library films. A copy of "Kodascope Eight Library Motion Pictures" can be had by addressing a request to: Koda-scope Libraries, Inc., 33 West 42nd St., New York City.

Eyemos at Olympic Games

Bell & Howell reports the shipment of four portable 35 mm. Eyemo cameras to the 1936 Olympic Games, filling a rush order from the official German Government photographers. Accompany the cameras was a complete equipment of Eyemo lenses and special accessories. Two of the Eyemos shipped were custom-built jobs, equipped with 400-foot magazines and electric motors. All four cameras were special high-speed instruments, capable of slowing down, for clear observation, the action of events so photographed.

IN GRATEFUL RECOGNITION

On the anniversary of Sunday, August 30, 1936, at seven o'clock, in the evening, a testimonial dinner was given to Edward O. Blackburn, vice-president and general manager of J. E. Brulatour, Inc., of Hollywood, the occasion being the tenth anniversary of Mr. Blackburn's association with that great firm of film distributors.

Mr. Blackburn (Eddie) to cameramen, producers, laboratory men and technicians alike, was the guest of honor of a large number of representative cinematographers, of Hollywood, at the Vendome Cafe, 6666 Sunset Boulevard, Merritt Gerstad, one of the ace cinematographers of the industry, being chairman of the informal-stag notable gathering.

The Sponsor Committee was composed of Charles Lang, Victor Milner, Hal Mohr, John Arnold and the Entertainment Committee was made up of Arthur Edson, Tony Gaudio, Fred Jackman and Peverall Marley.

The invitations stated that the occasion was in celebration of the constructive and valuable services Mr. Blackburn had rendered to all cinematographers individually and collectively during the decade just passed and it was evident from the enthusiastic welcome accorded him that the assembled donors of the unequaled feast there served were doing something from the bottom of their hearts.

There was no set program—just impromptu speeches—one by Hal Mohr tendering a glorious token of regard in the form of a wrist watch—and a heartfelt response by Mr. Blackburn as he received it and paid grateful tribute to the members of his personal staff.

All in all the occasion was unusual, even for

Hollywood, and long to be remembered by everyone.



QUESTIONS and ANSWERS

By F. HAMILTON RIDDEL

1. Can backward-motion be taken with 8 mm. cameras?

Yes, but there are precautions to be observed, due to 8 mm. film having only one side of perforation. This will require that when a backward-motion scene is cut from an 8 mm. processed roll, reversed end for end, it will be necessary to thread the 8 mm. film emulsion side towards the lamphouse in the projector. When shooting 8 mm. backward-motion scenes, avoid backgrounds which contain any reading matter, such as a sign, as in projection the wording will appear reversed. Other than observing these two precautions, 8 mm. backward-motion is photographed in the same way as with 16 mm.; that is, with the camera held upside-down in making exposures.

2. What choice of projection lamps are

available for the Model E Eastman projector, 16 mm.?

There are three choices: 400-, 500-, and 750-watt.

3. Is there an advantage in using super fast film for outdoor work?

Yes. When you are using an emulsion that is faster than ordinary film, a smaller diaphragm may be used to secure proper exposure. And because you are using a smaller stop, you get increased depth to your picture, always a desirable quality in movie making.

4. Are library subjects, on a rental basis, available in 8 mm.?

Yes. Many of the subjects found in 16 mm. size film are also to be had in 8 mm.

5. Can tinted cellophane be used for filters?

(Turn to Page 24)

MAX FACTOR'S
NEW
Satin Smooth
LIQUID FOUNDATION
A REVELATION IN FACIAL MAKE-UP

MOTION PICTURE SOUND RECORDING

(Continued from Page 5)

that may be used in conjunction with the basic amplifier to increase greatly its effective output.

For sound motion picture recording, the basic amplifier has sufficient power output, although if more than one recording device is to be operated from the amplifier, individual bridging amplifiers should be provided for each recording device to isolate them.

If the basic amplifier is to be used as a speech amplifier for a large size public address system, or as a speech amplifier for a radiotelephone or broadcast radio transmitter, a power amplifier must be used in conjunction with it. This power amplifier must have sufficient power to operate a number of loud speakers (in the case of public address work), or to modulate a high-power radio-frequency amplifier if it is to be used with a radio broadcast transmitter. In the latter case, this final amplifier is called a modulator.

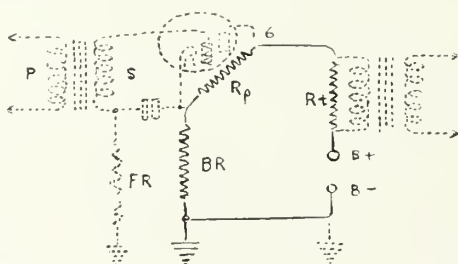


Fig. 3. Diagram explaining the functioning of cathode biasing.

Since this final amplifier operates at a high electrical level and has comparatively small gain—being solely a power amplifier—it may be operated from an alternating current source as long as the current is rectified and fairly well filtered. Battery supply cannot be considered for this stage because of the high voltage and current requirements.

Design of the Output Amplifier

Two type 845 tubes are used in push-pull in this amplifier; and the individual power supply for it employs two type 866 mercury-vapor rectifier tubes in a full-wave power supply that is filtered by a choke-input filter system. This power supply should be designed to provide ample voltage, with freedom from hum or fluctuation under even the heaviest load conditions. The circuit diagram is shown in Figure 4.

The amplifier operates Class A and is capable of delivering fifty watts of undistorted power if it is coupled in its input circuit to an amplifier providing five watts or more of undistorted power output. The basic amplifier thus furnishes more than sufficient driving power for this amplifier.

The input transformer for the power amplifier should have an input impedance of 500 ohms to match the output impedance of the basic amplifier, if only one of these power amplifiers is to be used. Since the connecting line is of low impedance (500 ohms), the power amplifier may be located a number of feet from the basic amplifier without any harmful effect being introduced.

The output transformer of this amplifier is a push-pull tube to line transformer having a secondary impedance of 500 ohms. If the amplifier is to be connected always to the same loud speakers, an output transformer may be used that will provide ex-

actly the correct output impedance to match the amplifier to these speakers.

Time Delay Requirement

It is extremely important that a means be provided for turning on the filaments of the rectifier and amplifier tubes before the high plate voltage is applied to the tubes. The tubes should be permitted to warm up for about a minute before high voltage is applied. This prevents damage to the tubes resulting from the application of high voltage before an electron path has been formed from the filament to the plate to carry the current. Such a delay is of paramount importance when mercury-vapor rectifier tubes are used.

A simple way to provide this protection is to use separate filament and plate transformers and switches, wired in the manner of switches **A** and **B** in Figure 4. It will be seen that plate voltage cannot be applied until the filaments have been turned on, nor is it possible to turn off the filaments and not the high voltage.

Switch **A** should be closed first when turning on the amplifier, and then after a wait of at least a minute, switch **B** may be closed. In turning it off, both switches must be opened. A much more satisfactory and safer method is to use a time-delay relay, set for a delay of about a minute, in place of switch **B**. A time-delay relay eliminates any possibility that the operator will become careless or forget to provide the one-minute delay. But on the other hand, such a relay is rather expensive—but then so are tubes expensive.

The Output Amplifier as a Bridging Amplifier

When several power amplifiers of the type shown in Figure 4 are to be operated from the output of the basic amplifier, as when a number of loud

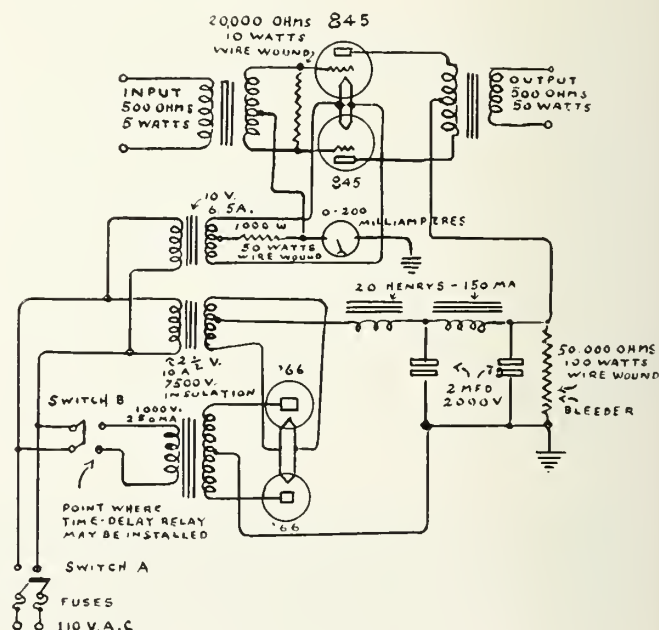


Fig. 4. Circuit of the high-power output amplifier.

speakers are to be supplied with speech current in a large public address installation, the power amplifiers are "bridged" across the output of the basic amplifier. Because of this form of connection, the

amplifiers are called "bridging amplifiers."

There is no change in the circuits of either the basic amplifier or the power amplifiers, the only alteration being the substitution of high-impedance input transformers for the normal 500-ohm input transformers of the power amplifiers. The bridging input transformers should have an input impedance in the order of 20,000 ohms.

The power amplifiers with their high input impedances are bridged across the basic amplifier output in the manner shown in Figure 5. A 500-ohm non-inductive resistance must be connected across the output of the basic amplifier when this bridging arrangement is used, in order to provide an impedance match for the basic amplifier and to furnish the necessary load for it.

The Bridging Bus

With this bridging circuit, these bridging amplifiers have little effect on the circuit and may be

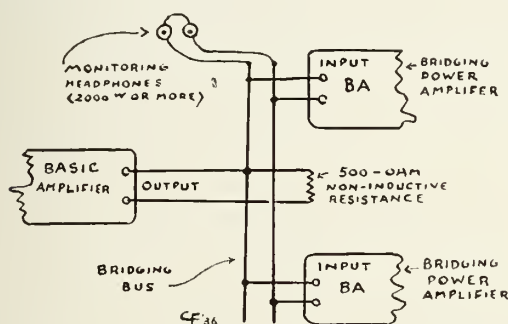


Fig. 5. Manner in which power amplifiers are "bridged" across the output of the basic amplifier.

connected and disconnected at will from the basic amplifier without appreciably affecting the impedance match at this point. Likewise, any change in the load on their output will not be reflected back to the basic amplifier and cause losses and distortion due to impedance mismatching.

The outputs of these bridging amplifiers must match their terminating impedances, or loads, for the most satisfactory transference of energy, just as in the case of any other amplifier.

The point where these bridging amplifiers connect to the basic amplifier is known as the "bridging bus." The 500-ohm load resistor across this bridging bus must not be disconnected, as its omission would cause the introduction of reflection losses and distortion in the amplified speech or music. A pair of high-resistance headphones (2000 ohms or higher) may be connected across the bridging bus for checking purposes and monitoring with no material effect on the system.

This concludes the chapters on the basic amplifier and its associated equipment. The next chapter of this series, appearing next month will consider the very important matter of gain and loss in communication circuits, their relation and measurement, and that most important factor in communication engineering—the decibel.

DON LEE HOLDS DEMONSTRATION

(Continued from Page 7)

6L7 is recommended.

The receiver "audio" channel must be resistance coupled and capable of substantially uniform response over a range of from 24 cycles to 800 kilocycles or more, in order to reproduce faithfully the

high-definition picture that is broadcast. A cathode-ray tube must be used as the image reproduction device, since it is practically impossible to construct a scanning disc of sufficient accuracy.

The high-frequency receiver scanning source should produce a saw-tooth waveshape of a frequency of 7200 cycles. This is applied to the pair of deflection plates in the cathode-ray tube which produces a horizontal deflection. The low-frequency scanning source should also produce a saw-tooth wave shape, and of a frequency of 24 cycles. This is applied to the pair of deflection plates which produces a vertical deflection. If the image appears upside-down, reverse the connections to the low-frequency deflection plates; if printing reads backwards, to the high-frequency plates.

A negative image is radiated from the transmitter. In the particular receiver constructed, if the image shown on the cathode-ray tube is a "negative" (white objects reproduced black and vice versa) one more or less, stage of "audio" frequency amplification (following the second detector) will give the proper "positive."

Synchronizing pulses are transmitted at the end of each line and at the end of each complete image for keeping the receiver scanning sources in step at the 7200 and 24 cycle frequencies, respectively. A small amount of image signal should be supplied to the grids of the gas triode tubes to synchronize the sources.

Extensive data on television reception is given in the December, 1933; November, 1934; and March, 1936, issues of "The Proceedings of the Institute of Radio Engineers." This publication can be consulted at public libraries, or obtained from the Institute of Radio Engineers, 33 West 39th Street, New York City, at \$1.00 per copy. For modern practice in ultra-high frequency receiver design, refer to "The Radio Amateur's Handbook," 1936 edition, chapters 13, 6 and 7, obtainable from the American Radio Relay League, West Hartford, Conn., or large radio stores, at \$1.00 per copy.

Reports on reception results are requested. Please give the date, time, signal clarity and strength, amount and nature of interference, your address, location of nearby hills and large buildings, type of receiving antenna and its height above ground, type of receiver, and your signature. Standardized reception report forms may be had from the Television Division of the Don Lee Broadcasting System, Seventh and Bixel Streets, Los Angeles, upon the receipt of a stamped, self-addressed envelope.

This information is furnished free by the Don Lee Broadcasting System without assuming any obligation whatsoever.

Technical inquiries should be directed to the attention of Mr. Wilbur E. Thorp, Assistant Director of Television.

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SINCE 1916
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PHOTOGRAPHY

(Continued from Page 9)

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1923—In January, Eastman introduced the 16 mm reversal film and apparatus for amateur movies.

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THE EYES HAVE IT

(Continued from Page 17)

to individuals. Americans who can't learn how to drink had better quit; otherwise, it's a sure way to lose jobs and standing.

Again, THE EYES HAVE IT—that "morning after" look, resulting in inefficiency in varying degree. The candid camera eye, as with the human eye, is not to be fooled; it see life as it is.

Poise means controlled action—a mentally conscious control.

Poise forms part of the actor's equipment and is necessary to any permanent success.

The candid camera picks up stills when the subject is not pose-conscious, often with amazing results and more often the motion picture picks up, in the actor's eye, character traits the casting director did not discover.

The eyes reveal subtle, fine, fleeting, as well as strong emotion. They reveal life's gamut from childish innocence to blasé sophistication, from ignorance to intelligence, living to dying, hating to loving, sorrow to joy, blasphemy to worship, sleep to surprise, indifference to enthusiasm, no sex to all sex, and the one hundred degrees of each. Again **"The eyes**

have it," and remember, **the mirror is the greatest teacher.**

Talent, good voices and looks are cheap, but the ability to grasp and put into use the many fine points of technique is the rarity, and this technique permits personality to work to advantage.

Most of us are not willing to pay the work price, to go through the grind which makes for artistry that makes one worth money to the public. You stand in front of a mirror eight or nine hours a day for a time, no matter what public work you do, and maybe some day you will be able to compete with others who have become proficient.

People often do things in front of a mirror and get splendid effects, not knowing if they could do the same things on the stage they would be considered artists, other things being equal.

We look for no inspiration, we relegate that word to the ash heap; there is no inspiration in business and this is business. One must inspire an audience against its will. It is not done by metaphysics, but by technique, which points up screen personality and makes it effective.

QUESTIONS AND ANSWERS

(Continued from Page 21)

Such procedure is to be discouraged, as results in most cases will be poor. Tinted cellophane is not selected for its photographic value. Moreover, you will encounter difficulty in preventing wrinkles in the cellophane, which will give uneven screen results. It is most advisable, therefore, to use only glass and gelatine filters as are supplied by photographic manufacturers.

6. What is the minimum length of time for exposing a title?

Always keep your camera in operation, in making titles, at least for three seconds. This minimum is equivalent to 48 frames (at normal speed), whether you are using 35 mm., 16 mm., or 8 mm. film. It is always best when shooting one-word titles to over-shoot them, as the tendency among amateurs is to secure insufficient footage. Any excess footage can always be deleted later, if necessary.

7. Can I splice 8 mm. film on my regular 16 mm. Griswold splicing machine?

This splicer readily adapts itself to 8 mm. splicing. It is best practice, however, to use a regulation 8 mm. splicer for any considerable patching work with 8 mm. or a combination-size splicer. In using your 16 mm. Griswold on 8 mm., care should be taken to lock the film in the jaws of the machine, so a perfectly parallel splice will obtain.

Note: As a service to amateur movie makers, we extend a cordial invitation to write in questions which will be answered in this column. Address all such letters to:

Questions and Answers Column,
THE INTERNATIONAL PHOTOGRAPHER,
506 Taft Building,
Hollywood, California

Paul Perry, 659, pioneer color cinematographer of the Far East, is said to be in India on color business.

Robert (Bob) Miller, 659, celebrated steamship photographer, has been in Hawaii several months promoting novelties in connection with that great institution the Hula dance. His purpose is to teach

and perpetuate this poetic dance which appears to have a world-wide appeal.

Cameraman Jack Smith, for several years associated with the King of Siam, elephant hunter with both gun and camera, and all around newsreeler of the Orient, has temporarily laid aside his guns and lenses for the dark room and the lab.

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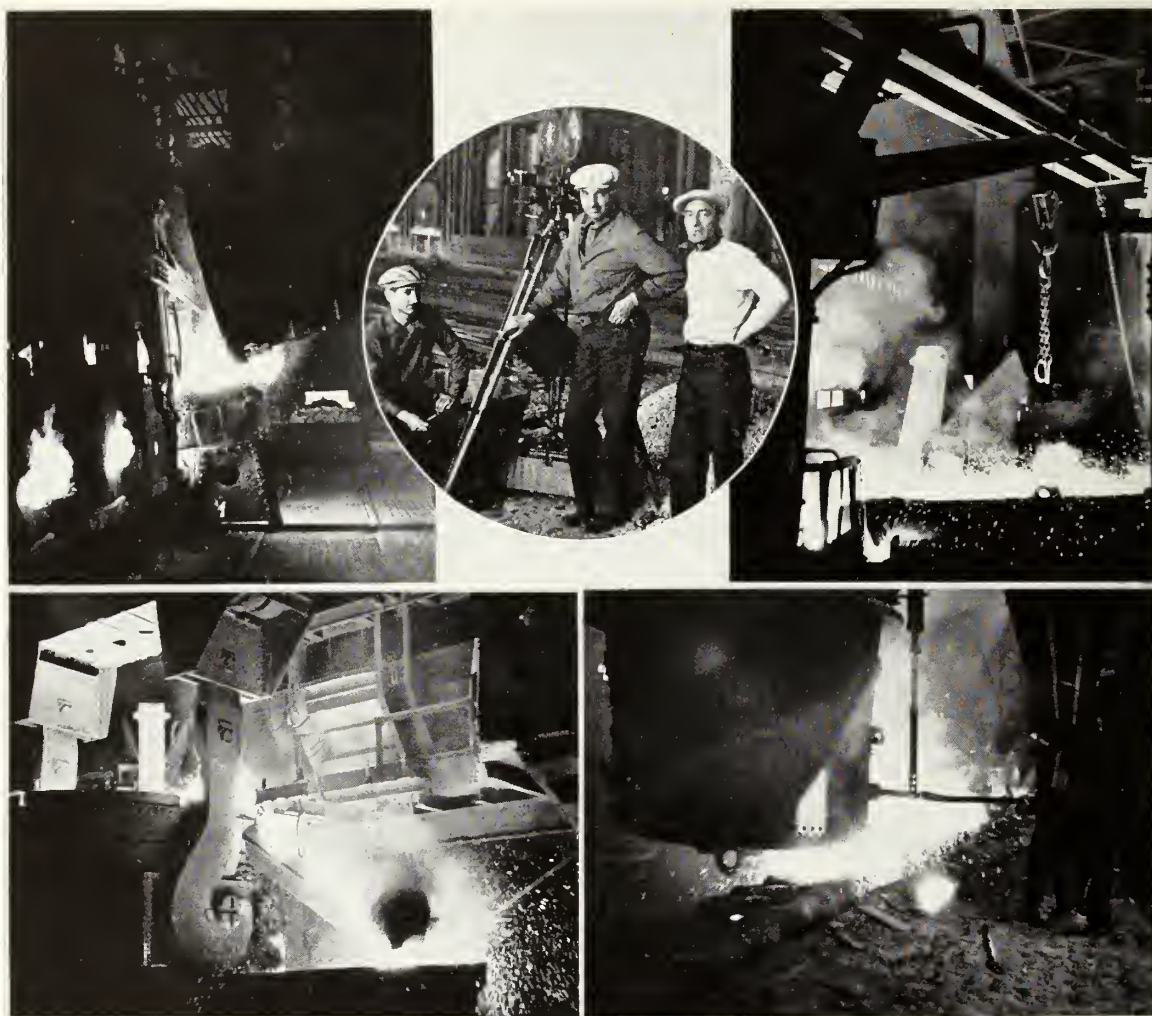
Cinelighting the Steel-Mills

By HAL MOHR

LIGHTING a set a quarter of a mile long is a problem in its own right. When you add to it all sorts of additional difficulties such as sooty black walls, the glare of molten steel, and a strict taboo against placing your lamps, cables or camera where they might interfere with the activities of a busy plant, you've raised the problem to really respectable dimensions. Finally, "top" the situation by allowing yourself a battery of only twenty-three relatively small lamps—and you'll have as difficult a problem in lighting as anyone cares to side-step. Both your luck and your

upon which moved an almost constant stream of cars filled with ore, scrap-iron and molten metal, while overhead great cranes juggled huge ladles carrying hundreds of tons of liquid steel.

Common courtesy dictated that we should avoid as far as possible doing anything to interfere with that stream, especially since the mill officials co-operated so generously with us. So the conventional method—bringing in a big generator outfit, parallels, and several score bulky Sun Arcs—was impossible. Our lighting system had to be capable of working from whatever source of power the plant



Ross Hoffman, Hal Mohr and Scotty Beal on the charging floor of the open-hearth building.

lamps must be more than ordinarily potent if you are to bring back anything!

That was one of the major problems I encountered a few weeks ago when the Universal Studio sent me on location in the plant of the Republic Steel Corporation in Cleveland, to bring back atmospheric scenes, backgrounds and Montage shots for a forthcoming picture. Many of our most important shots had to be made in the vast building that housed a battery of fourteen huge open-hearth steel furnaces.

The building itself was over 1,200 feet long. In the center were ranged the huge furnaces, with the wall of the building about 60 feet back from them. But there was precious little of that sixty-foot cable stretch between walls and furnaces available for placing lights; it was a maze of railroad trackage

supplied; it had to be compact and portable; and with all that, it had to be extremely efficient not only in covering a large area, but in penetrating power.

The answer was found in Mole-Richardson's "Cinelites," which were designed especially for location and industrial photography. They are "Inkies," of course, but instead of using ordinary globes, they use the No. 4 Photoflood, which produces more light than a conventional 2,500-watt Mazda. Since these globes are of the over-volted type, their light is much whiter than the light of a conventional Mazda, and consequently of much greater penetrating power.

The reflector of the "Cinelite" is a bowl-shaped aluminum spinning which throws a beautifully even light over a spread of about 60 degrees. The globe

fits in a socket which is clipped over the edge of the bowl, and held in place by a simple thumb-screw. Another thumb-screw holds the socket assembly to the top of a conventional telescoping pedestal. Finally, the three caster-equipped legs of the pedestal may be removed by unscrewing a Tee handle in the base.

By simply loosening these three screws, the entire lamp may be knocked down in a minute or two. The bowl-reflectors "nest"; the pedestals may be tied together like so many lengths of metal tubing. Our 23 "Cinelites," complete with cables, plugging-boxes, etc., were packed in two ordinary trunks.

On the job, those 23 lamps were more than equal to twice as many "Rifles." The lamps themselves proved, for the work we were doing, quite as efficient as the average "Rifle," while the whiter, more penetrative light of the big "Photoflood" globes, in addition to having about two and one-half times the intensity of the standard 1,000-watt Mazdas generally used in "Rifles," was much better for our purposes, as it carried farther, and had a higher actinic value. Yet each of the globes, while considerably outdoing an ordinary 2,500-watt unit, drew but a kilowatt!

In addition, the "Cinelites" were infinitely more portable than "Rifles"—and weighed less than half as much.

When we reached the steel mill we found that the only suitable power line supplied D.C. at 240 volts. We brought this down to a point where our lamps could handle it by the simple trick of connecting the lamps in series, two-and-two. In this connection I'd like to extend my compliments to the electricians from Cleveland Local 27, I. A. T. S. E., who handled our lamps. Competent stage electricians, this was their first experience with motion picture electrical problems, and for men suddenly thrust into intimate contact with a new and highly specialized task, they acquitted themselves nobly.

We had a remarkably large crew. From Hollywood came Production Manager Scotty Beal, Operative Stanley Cortez and Assistant Ross Hoffman. In Cleveland, Irving Smith, one of Universal Newsreel's aces, joined us to make Akeley shots. Finally, in addition to our own electricians, the Mill assigned to us a group of contact men, electricians and laborers, which rounded out our crew to fifteen or more.

Generally, either Cortez or I operated the Mitchell, while Smith ground away with his Akeley on

action a studio camera wasn't suited to getting; and often Cortez would busy himself at candid cinematics with an Eyemo. When you add to these three outfits the necessary magazine cases, battery boxes, and the 23 lamps with their cables, globes and plugging boxes it would seem as though we must have needed a good-sized trunk to carry our equipment about. But there are no roads other than railroad tracks in the square mile of ground covered by the Mill. The "Cinelites'" knock-down design solved that problem, however; we were able to load our complete photographic and lighting outfit on an ordinary railroad push-car which could be trundled around by manpower, and lifted bodily from the track whenever we stopped to make pictures, or when a trainload of ore or pig-iron had to go by.

Until one has actually worked in a big steel mill, one can have no conception of the vast scale on which the plant and buildings are laid out.

When you try to light such a scene for cinematography, you really begin to appreciate both the size and the efficiency of modern lamps and film. The huge building is normally as dark as night, with only the incandescent glare from the furnaces and molten metal as an occasional, blinding illumination. The walls and floor are covered—sometimes inches deep—with a greasy black soot that simply swallows your light.

On one side of the building—to the rear of the furnaces—the sand floor is honeycombed with molds into which the glowing metal is poured to cool into ingots. In the rolling mills a continuous ribbon of glowing steel passes through a maze of machines which roll it into railroad rails, structural forms, and the like, finally shearing the tough metal into relatively short lengths—twenty feet or so—like so much dough.

It is manifestly impossible to build the lighting-level up to anything remotely balanced with the glare of the molten metal. And with the restrictions imposed on us by the relatively few units we could use, the need for portability, etc., I frankly did not expect a particularly high average of successful shots. That actually over four-fifths of the 40,000 feet of film we exposed under these difficult conditions proved usable is due, I believe, entirely to the remarkable efficiency of the Mole-Richardson "Cinelites" we used. Without these unique lamps I feel confident that not one scene in ten would have been printable.

This demonstration convinced me that the "Cine-lite" is the ideal lamp for location use. Dan Clark's successful use of them in photographing the Dionne Quintuplets is another indication of their versatility, for there he had to provide an ample exposure-level over a relatively large area without injuring the babies' eyes. And their success on such extraordinary locations should prove their value for ordinary locations.

Using these compact, portable and efficient lighting units for location lighting, for "booster" lighting, and even for ordinary night exterior scenes, would simplify not only lighting, but many other related problems. Smaller generators would be necessary; fewer and smaller trucks for transportation; and the work could be done easier and quicker than with heavy conventional equipment. Who, I wonder, will be the first to throw overboard the traditions of weight, bulk and amperage, and rely for location and "booster" illumination on modern, lightweight, high-efficiency units like these?

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In Memorium

Since INTERNATIONAL PHOTOGRAPHER for August took its place in the long procession of our magazines, two beloved and well known members of Local 659 have passed "to that mysterious realm where each shall take his chamber in the silent halls of death"—Henry Kohler and Fred Eldredge, friends in life, brothers in their long pilgrimage.

Each was a long respected first cameraman of great experience and fine achievement, both in the east and in Hollywood, and popular among their fellows.

The line into the sunset grows longer, but to those who mourn these two noble men, there are the consolations of hope and faith and the love of many friends. To these the members of Local 659 and the INTERNATIONAL PHOTOGRAPHER add their heartfelt sympathy.

THE DE KAY CONTINUOUS MOVEMENT

(Continued from Page 15)

culties which have confronted others have been overcome. Perhaps the answer is in its simplicity, for, whereas other patents show complicated mechanism and a number of reflecting surfaces, the De Kay projector (Mr. De Kay has not yet applied his movement to a camera, but has plans for doing so) has a movement which is as simple as most intermittent movements, and has only two surface reflecting mirrors, one of which is stationary and serves merely to change the direction of the light reflected from the oscillating mirror. It is chiefly in the mechanism used to oscillate the mirror that the De Kay movement differs from other continuous movements. Besides its simplicity and minimum wear, it has a micromatic adjustment for changing the oscillation of the mirror so that it can easily be synchronized with the film, and can as easily be adjusted for 16 mm. and 8 mm. film, in which case it is merely necessary to change the sprockets and aperture plate to accommodate the smaller film. The projector is therefore interchangeable for any size film, which would necessitate only one projector for showing industrial and educational films of various sizes. The projected picture is perfectly steady at any magnification, whether new or shrunk film is used, the shrinkage being taken care of by adjustment of the mirror movement. The downward tilting of the oscillating mirror is constant, instead of harmonic as in many continuous movement patents, and the return movement is practically instantaneous, which permits a wider shutter opening.

The film aperture is two frames high and frames only the sides of the picture, the horizontal framing being accomplished by a special shutter running close to the film and following the downward move-

ment of each frame. Because of the steady pull on the film it is necessary to have only a slight pressure on each side of the film. No part of the projector touches the picture portion of the film and the danger of scratching is minimum. The easy, steady pull on the film further prevents breaking and consequently fire hazards. The fireproof cellophane film which recently has been tried in France can be run through this projector any number of times without damage to the film. Since it is only one-third as thick as ordinary positive film, an entire six-reel picture can be put on one 2,000-foot reel, thus cutting down the cost of handling, as well as the cost of the film itself.

One of the shortcomings of all present-day projectors is the keystone of a picture projected on a vertical screen from a point higher than the screen. This can be compensated only by masking the picture to make the sides parallel, but this does not correct the distortion. In the De Kay projector, however, this is overcome by adjusting the mirrors to produce a counteracting keystone. The projector, in addition, creates a pseudo-stereoptic effect.

The difference in focus resulting from the changing position of each frame with relation to the oscillating mirror is corrected by shaping the aperture so this type of movement is more quiet, depending, however, on the construction of the movement.

Although Mr. De Kay's projector is at present only an experimental model upon which he still intends to make some improvements, a demonstration indicates that it is the furthest advance in continuous movement projection to date and the successful use of the movement in a camera is only a matter of time.

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MISCELLANEOUS


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A Revolution In Lighting?

By A. C. JENKING

Description of an Entirely New System
Complete Brilliancy with Perfect Diffusion



Verna Wayne, by Stillman



Charlotte Boener, by Stillman

IN the last decade, while great advances have been made in the lens and sensitized surfaces little has been done about light and lighting and nothing about light quality. We have never been able to even approximate the north light, with its beautiful softness, penetration and soft brilliancy.

This new Vitachrome Difusionlite system has been developed and perfected so that we now have practically the north light produced artificially and available when you want it in the quantity you need.

Diffusion is definitely complete without detracting from the brilliancy of the beam. Actinically and in color separation the projected light upon the image has been greatly increased—photographically.

The light projected by the "Difusionlite" is entirely free of any specular images of the filament. It is as devoid of these as is daylight and throws an even quality of light over the surface of the image without hot spots, rings or shadows.

To quote Harry B. Wills, we now have what we have been seeking for years: Great brilliancy without burning up or flat lighting; getting the depth desired in all photography. To illustrate this the photograph here reproduced was taken with a very high light at the back of the head and a low light in front. This gives beautifully soft, transparent shadows enhancing the value of the portrait.

A description of the lights used in the Vitachrome Difusionlite system is herewith presented:

The light source is a special incandescent bulb. On this bulb is a front surface mirror of great brilliancy, with a co-efficient of 89. The diameter of this mirror has been very carefully calculated to obtain the results desired.

The bulb is installed in the "Difusionlite" with the mirror between the light (filament) and the object to be illuminated. This shields the subject from any filament glare, as it is impossible for any **direct** rays to be projected from the "Difusionlite." The mirror throws all direct rays **back** on the "Difusionlite" deflector at the rear. This deflector is electrolytically treated to a very precise granular formation. The size, shape and curve of the deflector has been carefully calculated for a maximum efficiency and the position of the light source. It is so designed as to project **all** of the light.

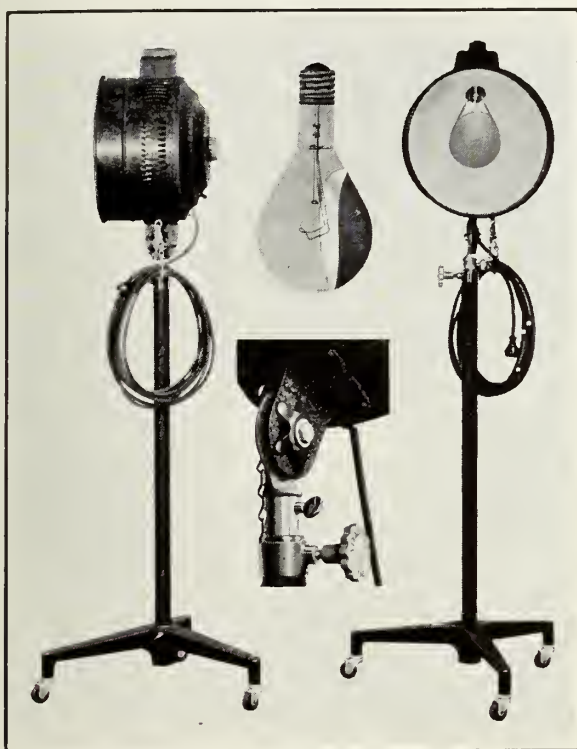
By turning all of the light to the diffusion surface with its myriads of brilliant facets the resulting light is perfectly diffused without having to pass through any sort of screen or condenser and without sacrificing any clarity or **speed** of light.

This system definitely adds greatly to the actinic value, as is shown in the accompanying tests of Gordon Chambers of the Eastman Kodak Company.

The elimination of **screens** increases photographic

depth, doing away with the flatness that most screens cause.

Built in the "Difusionlite" is a dialed rheostat or dimmer operated from the rear of the light-head, enabling the operator to control the light intensity



Vitachrome Difusionlite—Side view. Front view. Position of mirror on globe and clutch assembly.

from one to twelve, or, in terms of watts, from one hundred to two thousand. Thus giving any quantity of light desired.

The light head is removable from the extension column and can be detached from the base, making it easily transportable. While the "Difusionlite" is sturdily built, it is not heavy nor clumsy and weighs, complete, only 22 pounds.

By the elimination of flat lighting, tests show that there is a saving of over 60 per cent on retouching. For copy work, this makes a perfect light, having no center.

With the "Difusionlite" in position and turned on the subject, introduction of any opaque object like an arm or shoulder immediately in front of the light, will give no definite shadow on the screen. As you advance toward the screen a shadow will form very slowly, but at no time will it be sharp and the edges of the shadow will always be soft. This particular test is an interesting demonstration of the perfect diffusion obtained by the "Difusionlite" system.

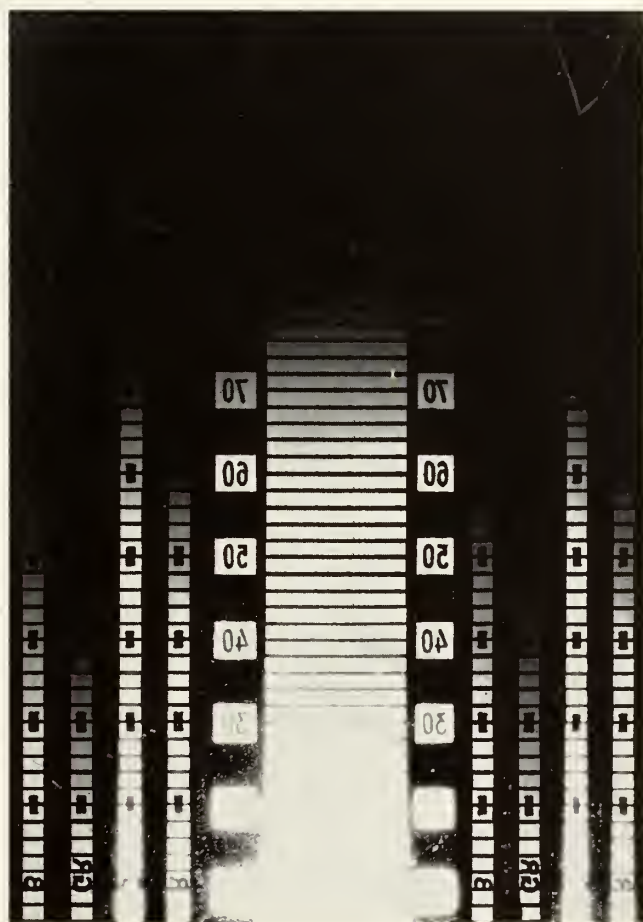
Film stars who have had to sit for stills under the old methods of lighting often remark that they are unconscious of any strain when posing under "Difusionlites." Many of the stars in motion pictures have commented as to the ease of these lights on facial expression. An example of this effect can be seen by studying the pictures shown in the article in this issue by John Van Pelt, entitled, "The Eyes Have It." All of these close-ups were taken with the "Difusionlite" system, by Stillman, of Hollywood.

There is also a noticeable absence of **heat** from these lights, owing to the fact that the light is not

projected in a solid beam. They are also positively **noiseless** in operation.

"Difusionlites" are invaluable to the commercial man for shooting glossy or highly-polished surfaces such as glassware and chromium-plated articles. Polarity is reduced to a minimum as there is a total absence of direct rays. This factor is also responsible for the remarkable results in obtaining detail such as the grain of woods in furniture, textures in fabrics, outline drawings, etc.

The discovery of this system is a certain advance in all fields of photography, and the writer suggests reading the article in the August issue of this pub-



Spectrum of color bands.

lication, entitled: "More About Lighting," by Lewis W. Physioc. In that article it is suggested that the element most inimical to good photography is flat lighting—and this "Vitachrome Difusionlite" system eliminates it.

After a year of travel abroad, Mr. and Mrs. George Mitchell have returned to Hollywood where the famous builder of the famous Mitchell motion picture camera, will devote his time henceforth to research along new and original lines of camera construction.

Dan Clarke who won fame and great praise for his cinematographic work in connection with the famous five babies of Callender, Canada, has once more been called to the same duty by the producers. Looks like a perpetual job.

CINEMACARONI

(With Sauce for Those Who Like It)

By ROBERT TOBEY

HOLLYWOOD HONEYMOON
or, The Loves of Lili Liverblossom
By R. THRITIS

Synopsis of preceding chapters:

Perriwether Murgle, press-agent extraordinary, has just been rescued from the lair of a Great Bald Eagle named

Willy Nilly, Willy and his wife

Nelly Nilly, were holding Perri captive. However,

Lili Liverblossom, beautiful star of Flamboyant Films, Ltd., has enlisted the aid of a ghost called

Potty, in order to rescue Perri, her press-agent. As we pick up the thread of the story, Lili, Perri, and Potty have escaped from Willy Nilly and are headed for Lili's apartment. Enroute Lili and Murgle quarrel over Potty, and the three fly the rest of the way to Lili's apartment in icy silence.

CHAPTER XXIII. HOME AGAIN. SO WHAT?

It was pretty late by the time our little party arrived in the vicinity of Lili's apartment. The ghost didn't bat an eye but hove right through the apartment house wall, neat as you please, with Lili in his arms. Murgle, not far behind, was a little startled but decided in favor of trying anything once. Needless to say he didn't go through the wall. In fact he nearly knocked himself out against the side of the building. Probably would have, too, except for the fortunate coincidence that the bricks at that particular spot were unusually soft. Painfully pulling himself up on the window ledge, Perriwether let himself in through the window. The ghost was busy trying to rub Lili's wrists, which were pretty cold due to the icy silence they'd been traveling in; but he wasn't making much headway. Perri took over the job.

In a few minutes Lili felt better, and rose and went to a mirror to look herself over. She yawned audibly.

"If you boys don't mind," she said, "I think I'll turn in, I look tired." She turned to the ghost curiously. "Do you sleep," she asked, "or isn't it necessary?"

"Oh yes," he answered in his slow, hollow voice. "I'm getting very tired, too."

"But how can you sleep?" asked Lili. "I should think you would fall right through anything you lay down on."

"The only way I can sleep is in a dark closet," said Potty. "It's a bit hard to explain," he added, "but you see since I can't be seen in pitch darkness I really don't exist and therefore I can't fall through anything and don't have to keep holding myself up. So I manage to sleep quite comfortably. I do hope that's not too confusing," he added hopefully.

"It is a little," picked up Perri. "If you don't exist, I don't see how you can get any sleep—no any that exists at any rate."

"If you don't mind I'd like to drop the subject," said Potty coldly. He turned to Lili. "Do you mind if I sleep in your closet, Miss Liverblossom?" he inquired politely.

Lili hesitated.

Perri started to remark that perhaps it would be more fitting if the ghost slept in his closet. Just then Lili remembered the ease with which Potty had acquired that mink coat, and she hesitated no longer. No telling how handy a creature like that could be. She never missed a bet, that Liverblossom.

"Okay, toots," she answered. "Help yourself. Don't sleep on my best slippers, though, will you—there's a dear."

"Is there?" inquired Potty naively. "Well, if you have everything you want out of the closet, I'll retire."

And without bothering to open the door, Potty slipped noiselessly into the closet off Lili's bedroom. There was a slight rustle as of silk, a clanking of bracelets, and then all was quiet. Perri turned slowly toward Lili, unsmiling, his eyes narrowed.

(What is Perri going to do? And what will happen to Lili, with a ghost in her closet? Do you really think so? See next month's installment of the super-serial, "HOLLYWOOD HONEYMOON.")

Into the Frying Pan

Dixie Dunbar and Tony Martin
Gail Patrick and William Bakewell
Eleanor Whitney and Johnny Downs
June Clayworth and Bob Cobb
Virginia Bruce and James Stewart

Into the Fire

Gene Raymond and Jeannette MacDonald
(or are they?)

Out of the Fire

George Raft and wife.

KNEECAP REVIEWS

(No space left on my thumbnails)

"SUZY," with Jean Harlow, Franchot Tone, Cary Grant, and Benita Hume in the cast, struggles to the death with dialogue—and loses. This would have been splendid stuff if it had been done in the silent days. It is packed full of love, hate, war, intrigue, self-sacrifice, and practically every action and emotion on the books.

Sound is the downfall of the picture. Harlow, though lovely as ever, is entirely unconvincing in her dialogue. Tone has so much trouble balancing an Irish brogue on the end of his tongue (and he's no juggler) that he forgets what a fine restrained actor he was, and chews up the scenery. Cary Grant does the best he can to reconcile his Londonish face and accent with his role of the very French war ace. Inez Courtney is far from up to par. Much of the dialogue is funny in ways that were not intended. Strange, too, considering that the scenario was the product of four excellent M-G-M writers. Perhaps they all worked on the story without knowing the plot.

Only Lew Stone and Benita Hume contribute good acting, and there are two songs in the picture that are excellent—"Did I Remember" and "Take My Love."

Direction was by George Fitzmaurice and excellent photography by Ray June.

"WE WENT TO COLLEGE," a tale of what not to do when you return to the old alma mater for an alumni reunion and to garner a big brick contract. Pretty inane, but clocks a surprising number of chuckles. The thing is distressingly full of comics, all of whom are capable of better things—Una Merkel, Hugh Herbert, Charles Butterworth, and Walter Catlett, to name 'em out loud. Walter Abel and Edith Atwater uphold the love interest. Lester White photographed.

"MARY OF SCOTLAND" with Katharine Hepburn and Frederic March heading a list of 42 names that RKO feels worthy of listing on the credit sheets. 4 March chalks up the highest score in this Scottish saga of queenly quirks and whimsies.

The film boasts of many beautiful and impressive scenes, and a few histrionic high points. While it may or may not be an accurate account of the life of Mary Queen of Scots, it definitely falls short in its role of pure entertainment. The courtroom scene, where Mary is tried, with the verdict foreordained by the English High Court, is the one masterpiece of direction and acting.

Florence Eldridge contributes an excellent, although somewhat peevish, Queen Elizabeth. John Carradine is in his element as the luckless Rizzio, and Ian Keith and Moroni Olsen do well with their parts as the knave Moray and the fanatic John Knox. Direction is by John Ford, and cinematography by Joseph August.

"STAR FOR A NIGHT." First starring vehicle for blonde Claire Trevor, this story of a great white lie is studded also with the names of Arline Judge, Evelyn Venable, Jane Darwell, J. Edward Bromberg, Dean Jagger, Alan Dinehart, Astrid Allwyn, and others. In the part of the little chorine who skimps and saves and lies to help her blind mother, Trevor gets her first crack at a real role, and handles it like a trouper, giving promise of greater things.

Picture itself is a fair human-interest yarn, sufficiently true to life to nauseate you at times. A mild vehicle, it seems to bulge with the strong performances of its cast. J. Edward Bromberg is so prominent in the sea of talent that he should be earmarked for topnotch character roles. Arline Judge is always captivating. Evelyn Venable is so quietly restrained in this as in previous roles, as to lead one to believe this is the one quality that will keep her from the pinnacle of screen success. Astrid Allwyn, with her customary feline excellence, is the menace of the play.

Presentable but uninspired direction is by Lew Seiler. The film gives you "Down Around Malibu Way," catchy tune sung and danced by the little Trevor. Photography is by Ernest Palmer.

Interesting to see some of the pictures of a few years back that are having a revival vogue. An especial pleasure is "ONE WAY PASSAGE," which stacks up in every respect with my recollection of its admirable qualities. It can stand unabashed beside any picture today. Lovely Kay Francis has never since looked more beautiful than she does here under the photographic ministrations of the late Robert Kurlle, nor has she ever performed any more creditably. William Powell surpassed his own future, and a priceless cast was completed by Aline MacMahon, Frank McHugh, Warren Hymer, and Roscoe Karns. Tay Garnett was responsible for the smooth, sparkling, and sophisticated direction.

Another worthwhile revival, of somewhat more recent vintage is "OF HUMAN BONDAGE." This is the picture that placed Bette Davis unquestionably among the top names of pictures. Her delineation of the central character, the tawdry, soulless, completely selfish waitress Mildred, was a work of art, as clear-cut as the finest of crystal. Leslie Howard's portrayal of the cripple ran a close second. Frances Dee, though thoroughly lovely, had little to do. Neatly turned bits came from Kay Johnson, Reginald Denny, and Alan Hale. How much of the excellence of the production was due to the understanding direction of John Cromwell can be surmised. Henry Gerrard is credited with the first-rate photography.

A new rule for motion picture extras is that they must all wear rubber heels when called for work on pictures. Signs posted in all studios state that those extras reporting for work with hard heels will have their calls cancelled. No more clumping about during scenes, it seems.

This is certainly the machine age.

They're making rubber stamps out of all of us.

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In the past year Mr. Mohr has directed photography on "Captain Blood," "Midsummer Night's Dream" and "The Green Pastures," and developed the lens mount to bring out backgrounds on such motion picture classics.

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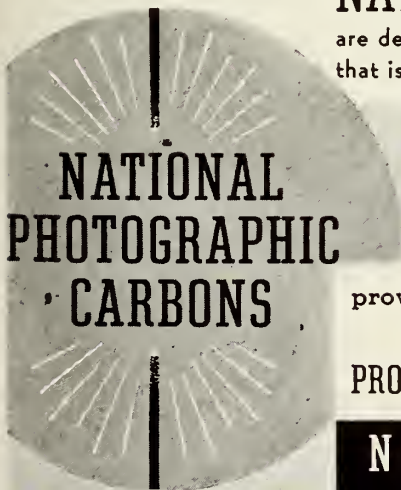
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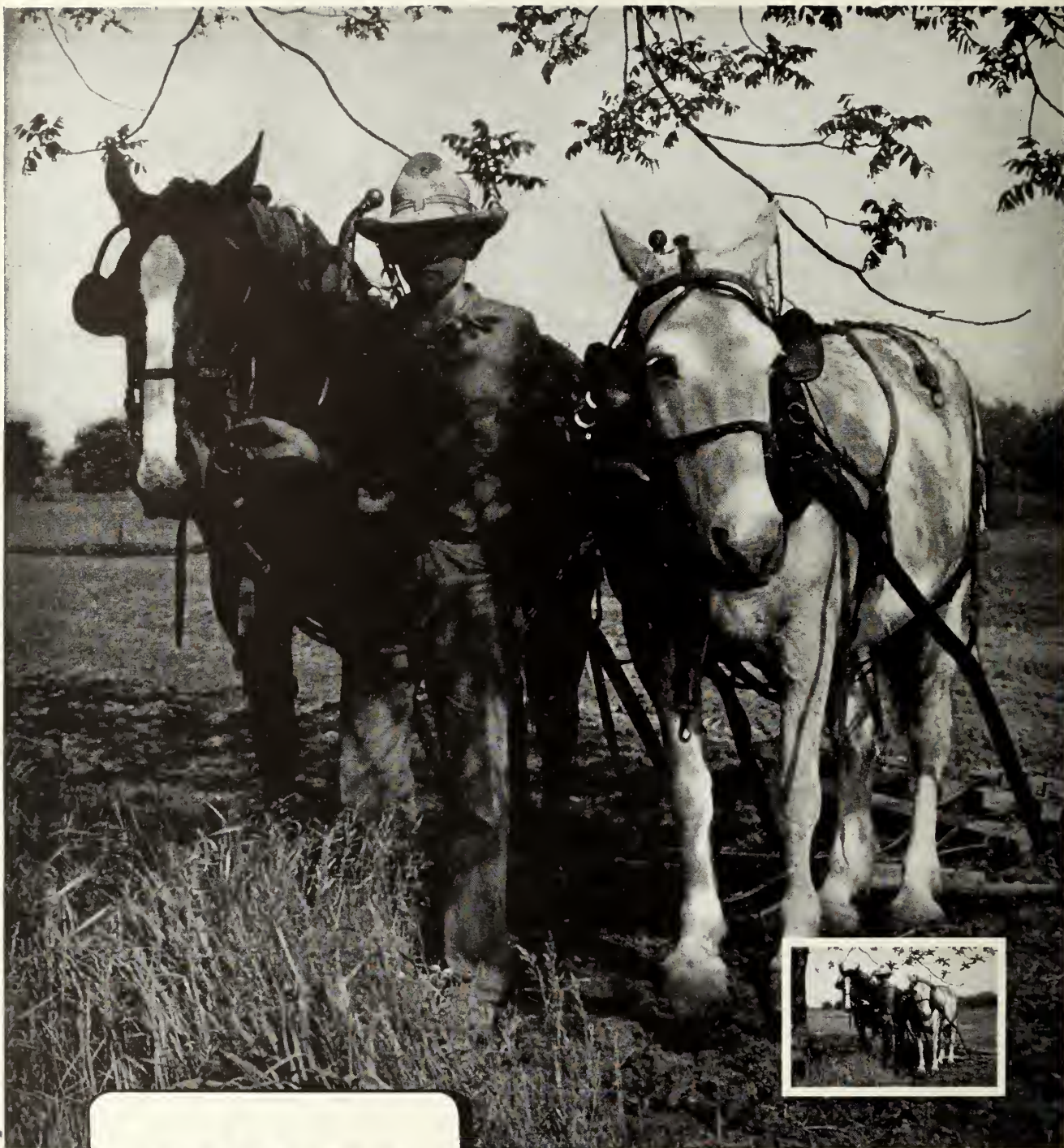
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WITH YEAR

OCTOBER, 1936

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RAY FERNSTROM

This tree and cloud effect picture was caught one day by Artist Fernstrom while cruising about in the new camera car of Fernstrom-Dunning, "Color Travelogue Photography." Artist Fernstrom likes to get beauty in 'em—as note the great dove of cloud floating in the heavens.

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One of the most wonderful natural theatres in California—this picture of Director Clarence Badger's rancho at Lone Pine. Ranch House in the foreground. Some day it may all be covered with green things—good to eat. A shot by Bert Longworth of the Warner studios.

INTERNATIONAL PHOTOGRAPHER

MOTION PICTURE ARTS AND CRAFTS

VOL. 8

HOLLYWOOD, OCTOBER, 1936

No. 9

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Frontispiece by BERT LONGWORTH

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PERSPECTIVE

This article from the facile and learned pen of the Technical Editor, Mr. Lewis W. Physioc, will be found on page 16 of this issue, and its importance is so great to all interested in the subject that special attention is directed to it and to the article to follow.

It is a masterful composition, well worthy Mr. Physioc as an artist, writer and one skilled in the art and science of motion picture fabrication; doubtless, therefore, it will become the authoritative work of its kind, not only in America, but wherever there is use for the employment of that illusory thing called Perspective. Not in a single article nor in several can the true Perspective of art be presented; it requires a "system" to properly be placed before the understanding. The genius of Mr. Physioc is evidenced in this, for he marshals his facts like a general marshals his soldiers.

Therefore, in the succeeding installments of the subject of Perspective, the new system will be proven for the benefit of those who understand the older methods. Also the application of the new system to the various studio problems will be worked out.

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England Wants to Know What's Wrong With Studio Technique

By FRED WESTERBERG,

Technical Editor International Photographer



HE movie industry over in Merry England is having trouble, it seems, in maintaining satisfactory technical quality in the face of rapidly increasing production.

The Kinematograph Weekly, in its issue of July 23, raises the question, "What is wrong with studio technique?"

The article undertakes to answer the question by pointing out the apparent lack of information on the subject of illumination and suggests that "a medium of balance between all phases of photographic endeavor in an illuminating engineering laboratory capable of handling scientifically all studio lighting problems."

"Someone," the article continues, "should be supremely responsible in each studio for 'yes' and 'no' of correct illumination levels with their related factors. Of a certainty it is not the cameraman, 'Sparks' (Hi, Sparky!) or the studio administration, but a fully qualified illuminating engineer.

"He alone can wipe out the 'Art' fallacy about film production, substituting 75 per cent scientific facts and what is more important, make everyone work to them. He can prove his worth as well as

supplying answers to the dissentients, with his densitometers, gradation photometers, photo-electric light meters, reflection factors (for color photography), lamp statistics and other scientific data. . . . Here is the remedy. What is your reply?"

Well, brothers, our reply is this: Don't undervalue your cinematographers. Give them every opportunity to develop. Train them right and when they are ready give them responsibility and authority. Let them sit at your council tables; give them your confidence and you can forget all about the little Caesars from the illuminating engineering laboratory.

"Ye Compleat Cinematographer" is a many-sided individual. Only one of his numerous qualifications is that he must be in effect an Illuminating Engineer. He must understand the nature of light and how to judge it. It is one of his tools.

The Cinematographer is the one man that can and should have the authority to deal with all departments whose work affects the quality of the photographic image.

To leave it otherwise is to invite chaos.

Wonderlite Dufaycolor Lamps

By T. THORNE BAKER,

Director, Research Laboratory



THESE lamps enable natural color photographs to be taken in any studio or home by incandescent light, with Dufaycolor film used in any camera without any filter on the lens. These lamps are of the photoflood type, giving a very high amount of illumination for the current used, and it is claimed they have the long life of six hours. Spectroscopic tests made in the Dufaycolor Research Laboratory have shown that the spectral energy distribution of the lamps remains constant throughout the life of the lamp; in other words, the color rendition should be faithful during the entire useful life of the lamps.

The glass of which the Dufaycolor Wonderlite lamps are made is specially colored to give the same filtering effect as our standard 1A filter.

In using a Weston, or other photo-electric meter, it must be noted that a difference in the reading will

have to be made for the following simple reason: Where a filter (such as the Dufaycolor 1A) is used on the lens of the camera, the Weston meter "sees" the white light of the photoflood lamps as it is reflected from the subject being photographed. But when taking a picture with Dufaycolor Wonderlite lamps, the light of which is deep blue, the Weston meter "sees" merely this blue light reflected from the subject.

The effect of the blue light on the meter is only about one-fourth the effect of white light on it. Hence the Weston factor must be multiplied by four. Thus, the Weston speed of Dufaycolor film used in photoflood light being three, it must be taken as four times three, or twelve, when estimating the exposure in the blue light of Wonderlite lamps. This will automatically correct the very low response of the Weston meter obtained in blue light.

THE GREATEST CAMERAMAN ON EARTH

James B. Shackelford, renowned cameraman of the Gobi Desert expeditions of Roy Chapman Andrews, and who left Hollywood for a year's cruise around the world must be somewhere near the Fiji Islands and the Great Barrier judging by the demand for used safety razor blades. It works like this:

The native loves a cutting edge with which he may make various and sundry implements. Every white man has razor blades to throw away and no place to throw 'em.

Cameraman Shackelford before starting on his present expedition was smart enough to advertise in the INTERNATIONAL PHOTOGRAPHER for discarded razor blades. He got several millions of them and traded them to natives of the South Sea islands for tapa cloth.

The rumor that the natives had decided to erect a monument to Mr. Shackelford as the greatest man in the world has been revived.

Some Observations About Light

By WILLIAM V. DRAPER

THE usual definition of a cameraman is: "An artist who paints with light." It is very true that a cameraman paints with light, but is he necessarily an artist? Art is a very intangible something which practically amounts to someone's personal opinion.

Could it not be said that a cameraman is a scientist who controls time? A preserver of NOW? A file clerk of eternity? A disciple of light? True, he is primarily concerned with making a beautiful picture, but "The eye is not filled with seeing." It is something much more important which he does.

To begin with, he takes a bit of action at a speed of 12. It is projected at a speed of 24. The action transpires in half the time it took originally. Intentionally or otherwise the cameraman has made it possible for millions of people to witness a phenomenon that could not be witnessed otherwise unless the observer was able to approach the incident in question at a speed of 93,000 miles per second or some such impossible speed. It would be necessary for him to meet the light that bore witness of the incident in half the time it took the incident to occur.

If the cameraman took the picture fast and projected it slow the reverse would be true. He would have to recede from the incident at some fraction of the speed of light, and if he should run the picture backwards an observer would have to overtake time, which is to say, he would have to outdistance light in order to review the incident as the cameraman is able to show it to you. These statements may be verified in Russell's "A, B, C's of Relativity." If the cameraman by accident is able to illustrate the theories of Einstein, Jeans and Millikan it would seem to prove that he deals with a scientific medium.

"A preserver of NOW." Possibly very few people bother to reason what this thing called NOW, is. NOW is the stuff eternity is made of. So you don't have to wait for eternity. It is NOW. NOW is the only time that ever was or ever will be. It was NOW when everything happened that ever has happened. It will be NOW when anything happens that ever will happen. One may say, "I'm going to Frisco the 30th of August," but when the 30th of August arrives it is NOW. You say, "I fell down stairs yesterday," but when you were falling it was NOW. So it seems reasonable to say that since a cameraman records incidents which could only happen at a time called NOW that he is preserving NOW for future reference. In other words, he preserves the eternal NOW so that we can review what was NOW, right NOW or at any future NOW.

"A disciple of light." A disciple is a student. If a cameraman is not a student of light he is not much of a cameraman. It is his stock in trade. This being admitted it may be said that a cameraman's stock in trade is the stuff the universe is made of.

The statement can be explained by reducing all things to their elements, the elements to electrons and the electrons to photons which is light according to material concepts and indicates, at least in theory, that those particles which appraise of the universe around us, are the ultimate in the division of matter and consequently the basis of everything material. A trick of photography will help to illustrate the point. We have all seen the news-reel of the explosion printed in reverse with all the pieces going back into place again. The point is this: That which was thrown out by the explosion had first to be put in. Not the way the camera did it, but in some way. It could not have thrown out what it did not contain within itself.

At some stage of chemical reaction all things give off light, which is to say, they turn back into light. The sun is turning back into light and wasting away at a rate of millions of tons per second. All things that we know of are capable of turning into light, therefore, everything must be basically light.

It is very helpful in dealing with material reasoning to remember that everything is based on theory. Scientists very bluntly state that they know no absolute truth outside of mathematics and incidentally mathematics are strictly mental so it is safe to say that they know no material truth. Since the world looks hopefully to these scientists for an answer to their woes, and these scientists reply: "We can only guess," it is not surprising that the confused world wrings its hands in despair and cry, "Truth, truth, there is no truth." There is lots of truth. Mind is made of truth, just as the universe is made of light and time is made of NOW, but you cannot find this truth by looking for it in that which is most unlike truth. Mind is infinite. Unlimited. Matter is definitely limited. Limited as to place, quantity, quality, stability, durability, etc.

Let us see what material (limited) theories and mortal (limited man) concepts, have to say about vision or understanding. We say: "I looked across the valley and saw mountains." Let's see if we did.

There was a time, according to scientists, when light was a wave motion in the ether. Ether was the stuff in which the universe was hung. Ether was much stronger than steel and 600 billion times lighter than air. Ether was needed to hold up the universe. No ether. No universe. Then something happened. Ether, which had been so essential, was suddenly not essential at all. It was dumped overboard and the universe left hanging on nothing. One

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This charming lady is not mentioned by Mr. Draper, but we are introducing her in this fashion to demonstrate how our old friend and contributor, F. M. Steadman, can manipulate this thing called light—in a room with a single window—to produce such outstanding results.

might imagine that such a tremendous change as this would cause a great deal of confusion, but strange as it seems, most people didn't even know anything had happened.

After this change light became a photon. A photon, roughly, is energy released through the disintegration of the atom. The result of a change in the orbit of a negative electron. As the standard speed of electrons is 186,000 miles per second the photon starts its journey at that lively little clip. If it hits anything it either bounces off at a like speed or is absorbed.

Sir James Jeans explains in one of his book that it is impossible to know anything about a photon because it is either a part of something else, in which case it does not exist, or it is expanding or traveling at a speed of 186,000 miles per second which makes it a bit difficult to see or even locate, especially if it happens to be traveling across cameras, or it strikes something and is again absorbed, in which case it does not exist again. In other words, with all the paraphernalia of science they cannot find it. They cannot see it and still it is the medium that is supposed to supply us with information about the universe. Here is how it does it.

The photon leaves its source and either hits you directly in the eye in which case you are conscious of witnessing the source of light, or it is reflected to your eye by some obstruction. If the photons are completely absorbed, that is, if the obstruction completely cuts off the source of light, you experience what you know as black or darkness or to be more exact, nothing happens. You didn't even get hit. If a portion of the light is absorbed you are hit only by the remaining portion which gives the illusion which we know as COLOR. If all the light is reflected you experience what is called white or we experience the pain of having our optics knocked about by a great many full grown photons and which we have learned to interpret as sight. In any event it can be readily seen that you don't look anywhere. You just stand there and get hit and you don't see anything except the source of light in varying degrees which according to the material scientists themselves, is completely unseeable. The object which you have always thought you saw has no way of becoming visible unless by some chemical action it is reduced to light which again you can't see because, well, because it just simply don't exist. This then, is what you are forced to conclude if you ask matter how we see.

Suppose for the novelty of it mind should be asked to explain this phenomenon. The word novelty is used because people rarely think of asking anything, but non-intelligent matter to answer their questions. Mind's answer would be unlimited because mind is infinite. Mind's answer would be absolute because it does not have to conform to a mortal concept. Mind would say: "Light is the understanding we have about the infinite universe of things that we have in our consciousness. If we have a consciousness of millions of people, billions of stars, unnumbered things and places, then these must all be in our consciousness. And if our consciousness can contain all these things then con-



sciousness must be infinitely bigger than the universe it contains. Certainly there is no crowded feeling when you take a new galaxy of a few million stars into consciousness. Consciousness will easily include anything the mind is able to conceive of.

Mind would say that the very best way to provide mind which is capable of conceiving of light, with light is to say, "Let there be light," and not make it dependent upon a limited concept, because ultimately it acts and reacts strictly in accord with mind's capacity to recognize or shall we say realize it. To make it real.

If this reasoning be true, if it be logical then looking to matter for evidence upon which to formulate the fictitious laws governing light (and when so tremendous a thing as ether can be dispensed with one may rest assured that all conclusions masquerading as laws are fictitious) only limits the usefulness of light. When we meet a man who does with light what we cannot it simply means that he has meditated until he has gained an enlarged concept of light. Unconsciously we gradually absorb his enlarged concept and light does better things for us, but it is always because we have an improved way of thinking about light—never because matter has made light any different than it has been for eternity.

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Improving Daylight and Outdoor Photography

By KARL A. BARLEBEN, JR., F.R.P.S.
Dean: New York Institute of Photography

HAVE you ever wondered at the marvelous outdoor effects often seen in the movies? Have you ever tried to duplicate them with your still camera—and failed miserably? Have you ever tried to figure out why, under identical conditions, the professional movie shots are so rounded and evenly illuminated while your own pictures were flat and interesting? If so, the following will be of interest and—I hope—some value.

While outdoor photography is regarded by most amateurs and beginners as easier than indoor work with artificial illumination, the fact remains that this is not quite so. Those who think sunlight work easier are unmindful of the lighting conditions. As we all know, daylight is most difficult to work with in photography because it changes not only from season to season, month to month, week to week, and day to day but also hour to hour. What may have been the correct exposure this morning at 11 o'clock for any given subject out of doors would in all probability not be the right one at 12, 1, 2 or 3 o'clock. The intensity of sunlight is extremely variable. Additionally, the quality changes.

Then, too, there is the problem of placing the light exactly where it is wanted at any given time of the day. The time which may be most convenient to the photographer may be most inopportune with respect to the lighting of the subject to be photographed. When doing interior work with artificial light, complete control is available. Not only can the intensity of the light be changed to suit conditions, but the direction can be made to serve the best purpose in mind for illuminating the subject. Thus the subject can be made to have depth, roundness, solidity and tonal quality. Out of doors it requires patience and good luck to secure just the effect wanted, using Old Sol for illumination.

Coming back to the professional motion pictures, it may or may not be general knowledge that those beautiful outdoor scenes which simply can't seem to be duplicated by the amateur are made, not as would appear to be the case, with daylight alone, but by the judicious combining of daylight and artificial light! Sounds silly, doesn't it—needing artificial light when working in full sunlight, yet the producers know their photography as is evidenced by the work turned out. Years ago they used huge reflectors coated with silver or gold foil to reflect back some of the light into the deep shadow areas of outdoor sets. Even now these reflectors are used to a limited extent, but the modern treatment consists of sending out huge trucks equipped with generators and powerful lighting units. The latter provide the proper quantity and quality of light in the shaded area, giving true rendition to all detail. This technique is particularly helpful in backlighted

scenes where shadows can be a nuisance and result in mere black blobs of nothingness. It is well known, of course, that a successful picture is one in which details can be seen in the shadow or dark portions, and it is this very quality where the greatest percentage of amateurs fall down in their work.

It is not only a matter of under-exposure. Improper lighting is probably mainly responsible. On the other hand, it is quite impossible to do anything about it with just a camera. And who cares to burden himself with bulky reflectors? It seems that the motion picture companies are one up on still photographers when it comes to producing brilliant, faithful scenes as the eye sees them. We have, through force of necessity and habit, come to regard certain photographic failures as quite normal because nothing better has been done or seen. As we see salon prints at exhibits, we subconsciously make allowances for the defects which we have learned must of necessity exist in photography. In short, the photograph does not always present a true record of the scene depicted because of the limitations of photography, technically and artistically.

However, the old ways are gradually being put aside for new methods, because we are now learning new techniques which in a measure help to overcome photography's so-called limitations. In order to duplicate those movie scenes which are so natural and life-like, it becomes only necessary to fit a speed gun—Synchronized Photoflash unit to you—to your still camera. That is all there is to it. Briefly, the speed gun lights the shadow areas and thus permits a true, faithful record of the scene to be captured on the emulsion. Many may think this is a radical departure from the customary technique, but as a matter of fact, news photographers have for years been using speed guns on their Graphic cameras for many difficult outdoor shots. Strange, it was not until the Kalart Company brought to the attention of the amateur photographer the wonders of using a speed gun in the open that the technique became more or less generally known in photographic circles.

The new technique offers marvelous possibilities in practically all forms of outdoor work. It has been hailed as a boon to the long suffering amateur who had about given up hope of ever being able to produce a true daylight picture on the negative in the camera and without resorting to hand work on either the negative or print. The small Photoflash lamp, reflector and synchronizer is small enough to be considered truly compact, and contrasted to a few large sheets of reflector material, certainly offers a most attractive difference in what has to be carried about. Again, the small speed gun, as attached to the cam-

era—any camera—forms an integral part of the camera and thus means very little extra bulk and weight.

So, while the still photography enthusiast cannot take with him a number of "booster trucks" (the generator and lamp equipped trucks used by the motion picture companies), he can provide himself with a small, compact "booster" of his own—a speed gun. The technique is simple enough. The chief distinguishing feature of synchro-sunlight photography—

exposure meter, preferably one of the photoelectric type, will enable the correct exposure to be determined. The flash light should be judged by the distance existing between the speed gun and the subject to be illuminated by it. In some cases, the flash lamp itself will not be directly at the camera, extension cords making it possible to fire it remotely. When a filter is used, as to record the sky in its true tonal values, the filter factor will of course be reckoned with in determining the exposure. A yellow



Courtesy Kalart Company

Left—A synchro-sunlight photograph, made on a June afternoon using 1 standard Photoflash lamp. The exposure was 1/50th second at f:8, K2 filter on Eastman Panatomic film using a Speed Graphic camera. Upper—A synchro-sunlight photograph. Exposure: 1/50th second at f:8, Eastman Panatomic film, K2 filter, Speed Graphic camera. Lower center—A synchro-sunlight photograph made in the woods on a June morning. Exposure: 1/200th second at f:8 on Eastman Panatomic film. The standard Photoflash lamp was fired at 15 feet from the center of the swing by means of an extension cord attached to the socket in the battery case. Eastman Panatomic film and Speed Graphic camera used. Right—A synchro-sunlight photograph. Exposure: 1 standard Photoflash lamp, 1/50th second shutter speed, f:8, K2 yellow filter, Eastman Panatomic film. Speed Graphic camera used.

which is the new name for this modern method—is the use of sunlight for strong back and top lighting while the speed gun preserves full detail in the dark foreground and front of the subject. Cloud detail in all its glory is, of course, preserved by means of a suitable filter. Another feature of this type of photography is the absence of distracting detail in the background and the manner in which distant objects are silhouetted against a perfectly rendered sky.

A brand new range of lighting effects are thus made available to the amateur and professional photographer by merely using a speed gun out of doors in sunlight. To use an open flash, in which the shutter is opened, the flash fired and the shutter then closed might appear to be capable of producing similar results, but such is not the case, as will be noted on thinking about the matter. The sky and background are liable to be over-exposed during the relatively long exposure time the shutter is open. By using a synchronized flash, this evil is completely eliminated.

The position of the sun can be ignored, although care should be taken to prevent it from entering the lens directly. In this work, as is all others, a generous sunshade (lens shade) should be used. This will effectively prevent any danger of flare or fog when shooting against the sun. The use of a reliable

filter, such as the K2 or its equivalent, is usually used. A so-called sky filter in which half the area is clear and half yellow also makes an ideal filter because it does not increase the exposure in the foreground.

While on the matter of exposure, the following table will be of some value:

Speed Flash Exposure Table Using 1 Standard Photoflash Lamp

For exposures on ortho "chrome type" emulsions such as Agfa Plenachrome and Eastman Verichrome.

Distance: Lamp to Subject	Lens Diaphragm Stop
6 feet—f:16	for standard flash—f:11 for baby flash
10 feet—f:11	for standard flash—f:8 for baby flash
15 feet—f:8	for standard flash—f:6.3 for baby flash
20 feet—f:6.3	for standard flash—f:4.5 for baby flash
25 feet—f:4.5	for standard flash—f:3.5 for baby flash

One lens stop smaller may be used for exposures on supersensitive panchromatic films such as Agfa Superpan, DuPont Superior, Eastman Super-X, Defender X-F, etc.

When making synchro-sunlight pictures, adjust the shutter speed for the distant portion of the picture in which detail is to be preserved. The exposure meter will aid materially in this. The illumination

(Turn to Page 26)

Behind the Ground Glass

(No. 3 of the Instructional Series)

By JOHN VAN PELT, *Actor*

Collaborating with Stillman, Photographer of Hollywood

We have asked Mr. Stillman to collaborate with Mr. Van Pelt in interest of character portraiture. Mr. Stillman is one of our best qualified artists, he having made a specialty of this branch of photography.

AN OFFER

Up to December 1, 1936, if the reader will send his print and the negative from which the print was made, to the Stillman Studios, 6548½ Hollywood Boulevard, Hollywood, California, Mr. Stillman at no charge offers to give constructive criticism of same from the taking

to the printing. This offer applies to portraits and character studies only—not snap shots. For this service please enclose return postage.—Editor's Note.



HE following article dealing with the technique of photographing character studies, was written primarily for the young professional or amateur among actors and photographers.

Character studies may be of three general classes commonly known as:

1. **Straights**—Photographs of an individual as he ordinarily appears called Portraits.
2. **Characters**—Portrayals of different characters by one person.
3. **Stills**—Usually group characterizations taken at the end of an action scene in motion pictures.

Prior to the taking of any pictures—characters or portraits—the photographer should arrange for the opportunity, through conversation to study the subject for types, expressions, best views and variety of characters, according to what use will be made of the pictures. In the process of taking one picture, other suggestions of character, pose or angle of shot should present themselves. Another objective of this prior interview should be **to put the subject at ease.**

With **Straights or Portraits**, the main object of course is to photograph the person to best advantage, expressing his most pleasing personality. Always keeping in mind that the portrait must be **natural and unposed.**

Realism and Vitality Are Objectives

With many persons the facial expression revealing that certain phase of personality you desire to show, comes and goes in a matter of seconds. With this in mind, it should always be the endeavor to have the mechanics so timed that you do not miss this high point in the subjects truest being, nor wear him out, causing him to go stale or become confused with your manipulation of gadgets.

Think through your plan of lighting the subject to accentuate his best features, leaving the minimum of experimenting in light adjustment for those moments after the subject has taken position for the pose. Have your camera in readiness—focus set—film in place.

Do the bulk of your experimenting in lighting on studio objects or members of your family—not on the public. There is a wealth of informative reading matter of invaluable worth in this and other photographic magazines on the very important and never ending subject of lighting.

One of the newest developments in lighting is described in last month's issue under title, "A Revolution in Lighting" called "Difusionlite," manufactured by Vitachrome Inc., 421 East 6th St., Los An-

geles. This system was used in taking the four illustrations of the picture actress Myra Marsh for this article.

These lights should be of especial interest to beginners in photography as they simplify several of the common lighting problems. The actor is interested as there is a decided betterment in the matter of eye strain, relieving the urge to squint, a fact which adds to realism and flexibility in characterization. The lights also permit faster adjustment, which means greater efficiency and lower costs.

Having the mechanics adjusted, you are ready to concentrate on **expression.** Through conversation and suggestion the foremost aim is to direct the subjects' mind into some theme to which his face will react through his thinking. This should apply to all types of studies including portraiture.

The photographer's request: "**Now look pleasant**" is usually **all** he gets—if he gets **that.**

Truest character comes from **thinking**—another latent art, otherwise the camera picks up a jumble of contradictory reactions. The rub here is to find those capable of thought, which statistics report is confined to 2% of us. This is the insurmountable obstacle in photography. It results in Expression No. 1—and only.

There is however a mild form of thinking of which most of us are guilty—a repeating of what we've heard or read—a sort of circular thought process which the photographer should be sure is functioning in his subject to insure contemporary reaction.

Any picture should be a cross section of life—not "Blah." You should feel the subject is engaged in conversation—just about to say something, which makes him **vital.**

When this is achieved, you have automatically accomplished another important thing. **You have led the subject's mind away from the camera.**

Being set and ready, you are now alert for that desired instant when the subject is **right.** Should you miss your opportunity, do not force the issue—relax—back up—start over—give the subject the



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opportunity again, through his mental processes to grow into the character you are after.

There can be no fixed rules for bringing the subject to a true expression. Some minds react best to

take to anticipate the picture taking as an **ordeal**. If such is the case it will take an unnecessarily long time for the photographer to relieve the tension—which is common.

MYRA MARSH, SCREEN ACTRESS



These character studies were taken at one setting by Stillman of Hollywood

just ordinary conversation, others require music, compliments, joking, serious discussion, description or absolute quiet—depending entirely on the temperament of the subject.

There must be no feeling of haste or strain, as the two most important factors in a picture are **ease** and **naturalness**.

No photographer can count his minutes. The subject may be pliable, have an expressive face and creative mind requiring only thirty minutes to take twelve good portraits—with another it may require two hours. A subject should not have pictures taken when under the influence of some worry. It is a mis-

Often a person will walk into the studio to make an appointment for a sitting and state that it is the first time ever, or in years that he has had a picture made, other than snapshots. Right **then** is the time to put his mind at ease, to get over without saying in so many words, that the experience is going to be a pleasure, not an irritation.

It is most unwise for the subject to have a member of his family or a friend present in the posing room. This applies to all other than very small children. There is no factor which so contributes to self-consciousness as the presence of some one **looking on** who is ordinarily close to the subject

Hollywood—Ye Old Tek-Nik Towne

Manufacturing in Los Angeles District Affiliated
with Motion Picture Production

By R. D. SANGSTER,

*Manager Industrial Department, Los Angeles
Chamber of Commerce*

(Written for International Photographer)

IN addition to the 16,000 persons employed by the film studios of Los Angeles County and who receive upwards of \$65,000,000 per year, there is another very large group which gains its livelihood here in connection with the making of motion pictures.

There is a long list of affiliated firms, most of them exclusively employed in making equipment, supplies, etc., for the studios. Most of these fall under the headings of developing and color laboratories, transcriptions and other sound recording, costumes, properties, sound and photographic laboratory equipment, cameras and equipment for same, lamps and miscellaneous lighting apparatus, wigs, make-up and cosmetics generally, photographic chemicals, etc.

Then there is a great number of suppliers, dealers and agents providing every kind of material, from raw film, onward.

It is believed that in addition to the 16,000 employees of the studios, there are enough more to bring the total list up to at least 30,000 workers earning a living here through motion picture production.

Instances of industrial activities of the district in some of these affiliated lines are:

Consolidated Film Industries, Inc., employing 150 persons doing developing and processing of films for the various studios.

Technicolor Corp., already employing 300, is to double the size and capacity of its color laboratories.

In sound recording, the leading firms in the United States have Hollywood plants which assist the studios in making records as well as in many other directions.

As to producing costumes, several large establishments, such as United Costumers, Inc., and Western Costume Co., keep extensive staffs employed and have tremendous stocks of uniforms and stock costumes on hand constantly.

The list of properties and supplies, as made here or stocked and held available for rent or sale, is almost endless, some 75 pages in a specialized directory being devoted to that purpose.

Many of these are for special use for a particular

picture, to illustrate, miniatures, "break-ways," etc., are not used over again. Others appear repeatedly.

The most vital instrument in the business, the motion picture camera, is made in Hollywood, as the Mitchell and also the Fearless. Many camera accessories, lenses, cases, silencers, booms, etc., are made here.

Bell & Howell of Chicago have a local branch plant. They make projectors, printers, splicers, perforators and other laboratory equipment, and of course are important makers of cameras.

Lamps and lighting equipment have long been important items of manufacture here, with designs adapted directly to cinema needs. Otto K. Olesen Illuminating Co., Mole-Richardson, Inc., and several others are actively producing such lighting facilities.

The making of cosmetics, make-up and wigs has become of considerable importance. Max Factor's studio is the concern with largest sales and widest distribution, but there are eighty other cosmetic makers here.

Sales of photographic chemicals made locally have naturally grown in volume; for example, Braun Corp., Los Angeles Chemical Co., and A. R. Maas Chemical Company, and others being notably active.

An interesting development is Horn Jeffrey Co., utilizing scrap film reclaiming of silver from old film.

Another active manufacturing plant is that of the Universal Microphone Co., Ltd. They are successful makers of microphones and stands, of recording machines, discs, needles, transformers, etc.

In addition to these few firms mentioned, there are many other plants with employees ranging from a few up to thirty or forty each, which design and make machinery, parts, fittings, accessories, mostly mechanical or electrical, to order.

The technique of picture-making is steadily being improved, and experts of the studios and affiliated plants are constantly trying out new gadgets and having experimental devices made to try to improve, quicken or otherwise better the current method. This experimental work alone is of large volume.

"COMPOSITION AND COLOR PHOTOGRAPHY," by Avenir Le Heart. If one doesn't make more artistic pictures after reading this little book it will be because instructions were not followed. Line and balance are well described with profuse illustrations of what constitutes composition. The book deals not only with outdoor photography, but with portraiture as well. Bound in art paper cover, published in Hollywood.

"THE AMERICAN ANNUAL OF PHOTOGRAPHY" for 1937, publication date September 29, 1937. The least that can be said is that this annual is even better than it has been. It contains everything from making a pin hole camera to photography by polarized light and that's not saying a thing about all the good things sandwiched in between. There's even a fine chapter about Civil War Photographers, and it's all beautifully illustrated. Published by American Photographic Publishing Company.

SUPER X STARS

EASTMAN Super X helps the cameraman as no other film has ever helped before . . . to enhance his artistry . . . to solve difficult situations. It helps the exhibitor, too, by delivering photographic quality that undeniably heightens box-office appeal. In this dual role, Super X stars in the fullest sense of the word. Eastman Kodak Company, Rochester, N. Y. (J. E. Brulatour, Inc., Distributors, Fort Lee, New York, Chicago, Hollywood.)

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Don Lee Television Passes Another Milestone

ACTIVITIES of the Television Division of the Don Lee Broadcasting System reached another mile-post of noteworthy achievement when, for the first time, the "sound" phase of a newsreel was broadcast over KHJ, the "sight" portion over W6XAO, simultaneously, and the united sight-and-sound picked up at a private residence, 3½ miles removed from both transmitters.

The demonstration was given on the night of September 1, 1936, as a feature of a special joint meeting of the Los Angeles sections of the Institute of Radio Engineers and the American Institute of Electrical Engineers.

The location of the television receiver at 2441 W. Silver Lake Drive, 3½ miles from the Don Lee Building at 7th and Bixel streets, where both transmitters are located, is especially significant.

"It is notable in that the receiver location is be-

**HARRY R.
LUBCKE**



a truck down a narrow alley designed to be wide enough only to pass bicycles."

Television History Made As KHJ Inaugurates Regular Television "Sound" Broadcasts

Another progress-ful chapter in American television history was written Wednesday evening, September 9, when, from 7:30 to 7:45 p. m., PST, the Don Lee Broadcasting System station in Los Angeles, KHJ, inaugurated a series of weekly television



Right—One of the two hills in line of sight between the Don Lee Television broadcasting station W6XAO and the private residence. The camera was in the line of sight, this photograph having been taken part way up the hill looking toward the transmitter, which is directly "through" the hill. Center—Group of persons looking at Don Lee television images being sent from W6XAO, three and a half miles away and behind two hills. First reception in a private home in Los Angeles of high definition television. Left—Private home in Los Angeles where Don Lee television transmissions are received, sight via W6XAO, sound via KHJ. The antenna for the television can be seen at the rear of the house.

hind two hills, as viewed from the transmitter," said Harry R. Lubcke, Director of Television. "This is an 'unfavorable' television location," he continued, "because of the straight-line propagation characteristic of ultra-short television waves, and is equivalent to a more accessible location at two or three times the distance."

Of exceptional interest to the assembled engineers was Lubcke's emphatic statement that, "It will not be possible to receive sound and television on the present radio receivers. They are capable of receiving only sound and can never be adapted to receive television. Television requires wide frequency bands; sound radio does not. Just as a truck requires a large width of road for its passage, and a bicycle does not, so it would be impossible to drive

"sound" broadcasts, synchronized with the broadcast of television images from W6XAO, the Don Lee television station. Announcement of this latest forward step of the Television Division of the Don Lee Broadcasting System was made by Harry R. Lubcke, Director of Television for the network.

The event marked another "first time" achievement by the Television Division inasmuch as a broadcasting station and a modern high-definition television station, such as W6XAO, had never been united until the successful proving experiment of the previous week.

The sound can be received on any radio capable of receiving KHJ, and the station will operate on its usual frequency of 900 kilocycles. To receive the IMAGE, however, a new television receiver must be

employed.

"Particularly notable in this event was that two hills intervened in the path between transmitter and receiver, making the test equivalent to one conducted at two or three times the distance," stated Director Lubcke.

The preview further demonstrated that the somewhat "obstinate" ultra-high frequency waves, which must be used for television, will "bend" over hills and provide a satisfactory service area behind them.

For those who are without television receivers, there is a measure of sport in visualizing the composition of the visual scenes by listening to the "sound" part of the program, only.

Admission of limited groups to the sight-sound broadcasts is granted by tickets obtainable by addressing a stamped, self-addressed envelope to the address given below.

Data on the requirements of the television receiver required for the reception of W6XAO, and how one may be constructed are similarly obtainable by addressing a stamped, self-addressed envelope to: Television Division, Don Lee Broadcasting

System, 7th & Bixel Streets, Los Angeles, California.

Group From Academy of Motion Picture Arts and Sciences To Witness Synchronization of Sound via KHJ With Television Images Released by W6XAO

Returning a courtesy of one year ago when he was asked to speak before their organization, Harry R. Lubcke, Director of the Television Division of the Don Lee Broadcasting System, played host to members of the Research Council of the Academy of Motion Picture Arts and Sciences on the night of Wednesday, September 16.

Then, as a year ago, Director Lubcke declared that "Television holds a promise, not a threat, to motion pictures."

In support of this statement, he points out that television would logically become an exceedingly valuable customer of the motion picture industry.

"Film is a satisfactory program vehicle," says the Don Lee television expert, "and, when especially produced, may supply much of the future commercial television programs."

TENTATIVE PROGRAM FOR SMPE CONVENTION ANNOUNCED

Before the coming of sound motion picture engineering was a comparatively simple matter. Today the industry is forced more and more to become electrically and mechanically minded as is evidenced by the wide variety of engineering matters to be discussed before the fall meeting of the Society of Motion Picture Engineers to be held at the Sagamore Hotel, Rochester, New York, October 12 to 15.

Meeting in Rochester for the first time since October 1922 members of the Society will be entertained by Eastman Kodak and Bausch and Lomb Optical Companies during its four day meeting. On the second day of the convention the Kodak Park Plant of the Eastman Kodak Company will play host to the members with a special invitation luncheon to be given at the Kodak Park Plant. The day following Bausch and Lomb will hold a similar luncheon for members. Inspection tours of plants are planned for the members by each of these organizations.

The semi-annual banquet will be held on Wednesday evening, October 14, at the Oak Hill Country Club at which time presentation of the SMPE Jour-

nal Award and the Progress Medal will be made. Recipients of these awards have already been selected by the Board of Governors but their identity will not be announced prior to the banquet.

Announcement of the election of officers will be made at the first meeting to be held Monday morning, October 12. This meeting will be followed by an informal luncheon, when Charles Stanton, Mayor of Rochester, will welcome the delegates to the Kodak City.

Outstanding among the papers are three to be delivered by Dr. C. E. Kenneth Mees, Vice President and Director of Research of the Eastman Kodak Company. Dr. Mees' papers are, "The Development of the Art and Science of Photography in the Twentieth Century"; "Color Photography (with demonstrations and motion pictures)"; and "The Kodak Research Laboratories." C. G. Weber and J. R. Hill will represent the National Bureau of Standards, Washington, D. C., with two papers. A number of papers will be delivered by West Coast members of the Society as well as those from Chicago, Rochester and New York.



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Artificial Sunlight Simplifies Technicolor Exteriors

By WILLIAM V. SKALL

WHEN we made "Dancing Pirate," we filmed all of our exterior scenes on a studio stage, where every factor of lighting was completely under control. When we made "Ramona," it was decided that virtually all of the scenes were to be filmed on the natural, outdoor locations. None the less, the lighting must be as

tensity of the light; one is working with familiar tools, and can work as fast and as surely as would be possible in the studio. But—the light from your "boosters" must be a virtually perfect match for the color of natural light, or the result on the screen will not be natural.

Fortunately, this problem had been taken care



A Screen overhead diffuses the sunlight, reflectors provide backlight, and a "H. I. Arc" the frontlight, as Cameraman Skall Technicolors dolly-shot for "Ramona." Right—Using side Arcs and "H-I Arcs" to supplement sunlight in Technicoloring "Ramona."

completely controllable as though we were working on a stage. Modern dramatic cinematography demands a high standard of portrait lighting no matter where the scene is filmed; and when, as in "Ramona," the production is filmed in Technicolor, this is of additional importance, for the relative newness of the color medium attracts the attention of critics who otherwise take photography so completely as a matter of course that they rarely mention the cameraman.

In making "Ramona" we had two alternatives in lighting our exteriors. First, of course, was the time-honored expedient of using reflectors to supplement natural sunlight. Second, was the more modern method of using artificial "booster" lights for the same purpose.

The first method had many disadvantages, and but one possible advantage. Reflectors are much slower to use; they must be readjusted constantly, to keep pace with the changing angle of the sun; and they do not permit accurate control of the reflected light. On the other hand, reflecting the sun's rays back into the picture from a silver or lead reflector, one can be confident that the color of the direct and the reflected light will be consistently the same—an undeniable advantage in natural-color photography.

Using artificial "booster" lighting, one has almost perfect control of the angle, spread and in-

of long before "Ramona" went into production. From the start, the Technicolor engineers have standardized their process with the color-distribution of natural sunlight as the normal in lighting. Following this lead, the Mole-Richardson engineers, in designing the modern arc-lamps used in lighting all Technicolor pictures, have developed lamps which produce light that is an almost perfect match for natural sunlight. The "Side Arcs," which are used for general floodlighting purposes, produce light that needs almost no modification to double for sunlight. The high-intensity "H. I. Arc" and "Ultra-H. I. Arc" spotlights, while their higher intensity produces a slight excess of bluish radiation, need only a very light straw-colored gelatin filter to make them match both the "Side Arc" and the sun. And these new-day spotlights, with their "Morinc-lens" optical systems, allow a far more precise control of light than any previous units, for they are free from both the element-shadows of the old mirror-type Sun Arcs, and the dark centers and "hot circles" of ordinary reflecting spotlights.

Naturally, then, we decided that for all of the more intimate scenes in "Ramona" we would use this man-made sunlight for "booster" lighting. The results, I think, have proven the wisdom of this course.

Only in the extreme long-shots did we use re-

(Turn to Page 24)

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACTS OF CONGRESS OF AUGUST 24, 1912, AND MARCH 3, 1933

Of International Photographer, published monthly at Los Angeles, California, for October, 1936.

State of California, County of Los Angeles, ss.

Before me, a Notary Public in and for the State and County aforesaid, personally appeared Silas Edgar Snyder, who, having been duly sworn according to law, deposes and says that he is the Editor of the International Photographer, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse side of this form, to-wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher—International Photographer, Los Angeles, Calif.

Editor—Silas Edgar Snyder, Los Angeles, Calif.

Managing Editor—Silas Edgar Snyder, Los Angeles, Calif.

Business Manager—Helen Boyce, Los Angeles, Calif.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.) International Photographers Local 659, International Alliance of Theatrical Stage Employees and Moving Picture Machine Operators of the United States and Canada, 501 Taft Bldg., Hollywood, Calif. Harland Holmden, Vice President.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholders or security holders appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed through the mails or otherwise, to paid subscribers during the twelve months preceding the date shown above is..... (This information is required from daily publications only.)

SILAS EDGAR SNYDER, Editor.

Sworn to and subscribed before me this 22nd day of September, 1936.

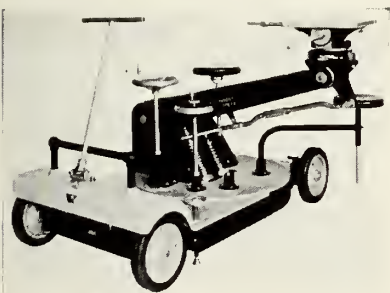
HAROLD W. SMITH.

(My commission expires March 7, 1937.)

LEWIS W. PHYSIOC GOES TO U. S. C.

The many friends of Lewis W. Physioc, Technical Editor of **International Photographer**, will learn with pleasure that the well known artist has accepted an appointment from University of Southern California, as Instructor of Motion Picture Technique and Photography.

Mr. Physioc has for several years acted as one of the Technical Editors of this magazine and he needs no introduction to the Motion Picture Industry both in America and the Orient. He is an artist as well as a writer and technician.



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FOLMER GRAFLEX CORPORATION

Outstanding prints from Graflex users the world over are now being exhibited in the newly completed display room of the Folmer Graflex Corporation at Rochester, N. Y. A great number of Graflex owners have voluntarily sent in prints whose excellence has won them places in this photographic salon.

Because of the many fine prints received from owners of Graflex and Graphic cameras, the company plans the inauguration of a series of traveling salons for exhibition in various metropolitan cities throughout the country, using the main salon at Rochester, N. Y., as the source of supply for these traveling exhibits.

Folmer Graflex Corporation extends an invitation to all Graflex and Graphic users, whether nationally known or not, to send in prints which in their estimation might have sufficient photographic worth to hang in the main salon and then in one of the traveling salons.

"We believe that many an amateur photographer would like to see his best prints receive national recognition," states a Graflex Corporation spokesman. "Our main salon and the several traveling exhibits which we contemplate, afford admirable opportunities for these camera enthusiasts to receive such recognition. We will welcome the receipt of outstanding prints from any Graflex or Graphic user and will be more than glad to carry a credit line beneath each one selected for these exhibits."

"Prints should be mounted on 100 or 120 point board, the mounts to be 15 inches wide by 20 inches high. Or, unmounted prints of a size to fit these dimensions may be submitted, in which case we shall have them mounted ourselves. Complete data for each picture will be welcome."



A NEW SYSTEM

FOR MOTION PICTURE ARTISTS, ARCHITECTS AND BUILDERS

(AUTHOR'S NOTE.—Every day's experience in the art department of a motion picture studio discloses the importance of the subject, and who would like a little more information, we disclose what we know about the building or setting of a scene.

THE director, the art director and the sketch artist agree on a suitable angle from which the subject is to be seen or photographed. This they do by drawing the angle of lens (or angle of vision) on the ground plan. For convenience, they use celluloid triangles cut to conform to the various lens angles, with the vertical angles ruled inside the outside angle, together with cross

rulings of the popular scale of $\frac{1}{4}$ in equals 1 foot.

The artist, knowing something about perspective, starts to lay out his sketch. He soon finds that one of the vanishing points is somewhere over on his neighbor's table, and the measuring points are away down under the table back of him.

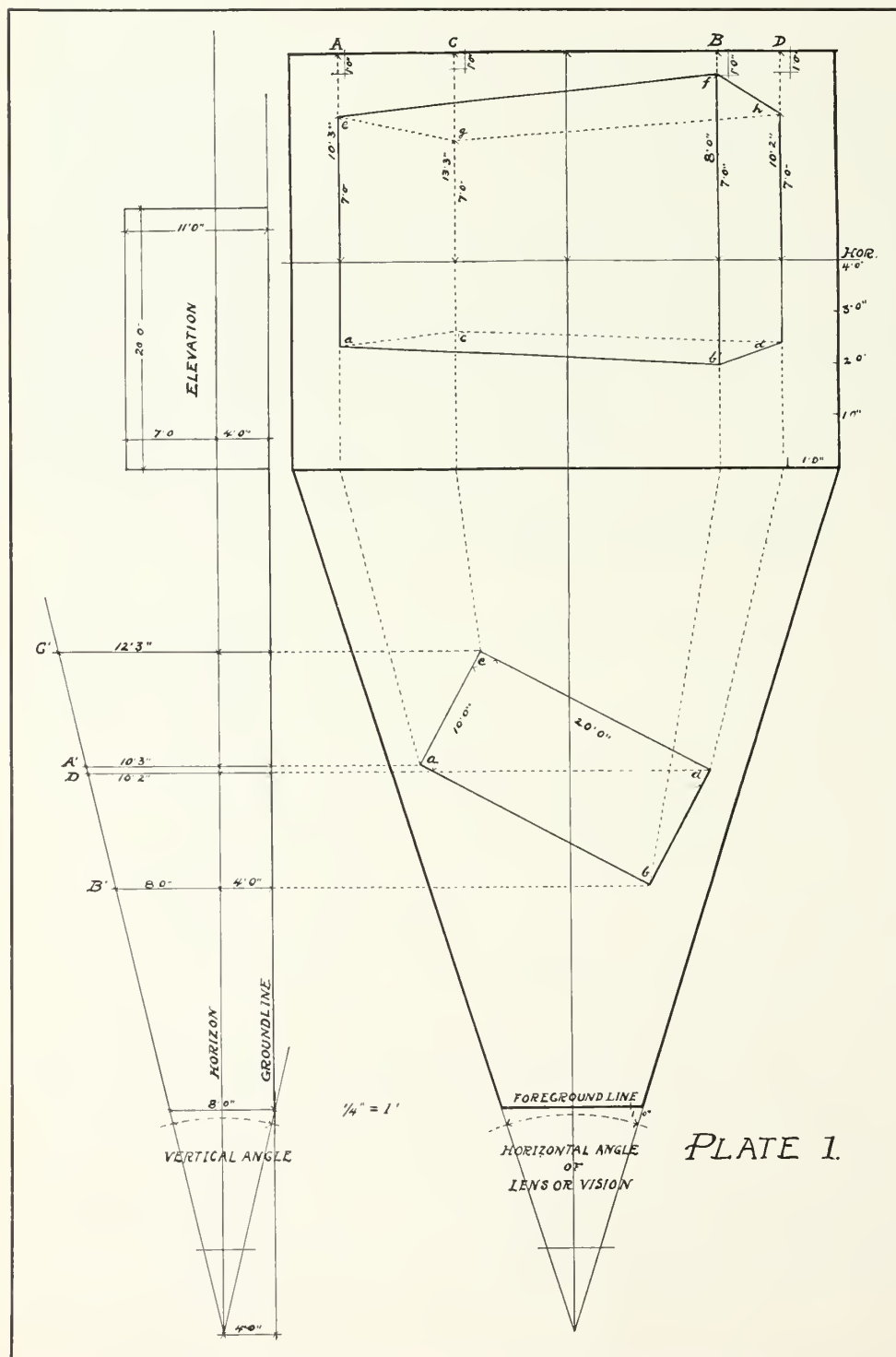
He soon becomes disgusted with these mathematical requirements and begins to "fake" the perspective.

He sketches a few of the receding lines, erases them and tries again. His judgement tells him that one set of lines vanishes too acutely and the other set not quite enough—the building appears twisted and distorted. He makes more erasures, and so on, until he is satisfied with the suggestion of perspective. If the plans call for any degree of elaboration, he finds several hours, or perhaps a day, must be devoted to just the perspective lines and proportions, before he is ready to execute the more pictorial elements of the sketch.

When the sketch is finished, it is pretty to look at, and is satisfactory in many ways: but the director complains that it looks too far away, or too close, too large, too small or whatnot. The architectural draftsman complains that it does not suggest the actual measurements of the plans and gives a false impression of the dimensions of the set. It must be done again.

Let us see how it can be done easily, quickly and accurately.

This new system depends upon employing the angles of the lens (or eye) and one of the horizontal planes. The acuteness or obtuseness of the angle controls the apparent distance of objects and the degree of perspective influence, i.e., a close shot makes the lines vanish more acutely, and vice versa. So that if a director wishes to see the effect



of PERSPECTIVE

By LEWIS W. PHYSIOC

perspective, especially in the various process departments,—matte shots, glass shots, miniatures, etc. For the benefit of those who are a little new system. In order fully to inculcate the principles of the system, we select a simple block figure which we assume to be the plans of Let us review the procedure as it frequently occurs.)

of a close shot the set must not be drawn to appear too far away.

The plan, as shown in Plate 1, represents the desired angle, the amount of foreground to be shown and how the set is to be placed in the picture.

Process: Extend the angles of the lens (or eye) to the desired width of the sketch to be made and establish the base line of the frame. Extend these points upwards to the proportional dimensions—in the present case, we use the motion picture proportions, $1 \times \frac{3}{4}$.

Having established the size of the sketch, extend the points a, b, c, d, (as shown on the ground plan) to the base line of the sketch and continue them **vertically** to the top of the sketch, as shown at A, B, C, D. The next step is to determine the horizon.

The horizon depends upon the height of the lens (or eye). To the left of the horizontal angle, construct the vertical, elevation angle. This is done by laying the celluloid triangle on the drawing with the axis parallel to the horizontal plan, and pointing off the inside angle which represents three-fourths of the horizontal angle. If no prepared triangle is available, the various angles are made from their respective focal length lenses and the dimensions of the motion picture frame.

The height of the horizon is a matter of artistic taste or special requirements of the director. On exteriors, it usually is considered as the height of the eye of a standing person; on interiors, it may be any height but usually is about four feet from the floor, as in our present example. When the camera is set level, the axis of the picture forms the horizon.

On measuring the foreground line of the plan, the distance is found to be 10' 6"; the base line of the sketch, then, is its equivalent, enlarged. By pointing off one foot on the fore-

ground line of the plan and extending it to the base of the sketch we get the proper scale of one foot. As the horizon is four feet from the floor, four times this ticked off scale, above the base line, will establish the horizon.

We must now find points a', b', c', d', as shown in the sketch.

Take the T square and extend, horizontally, points

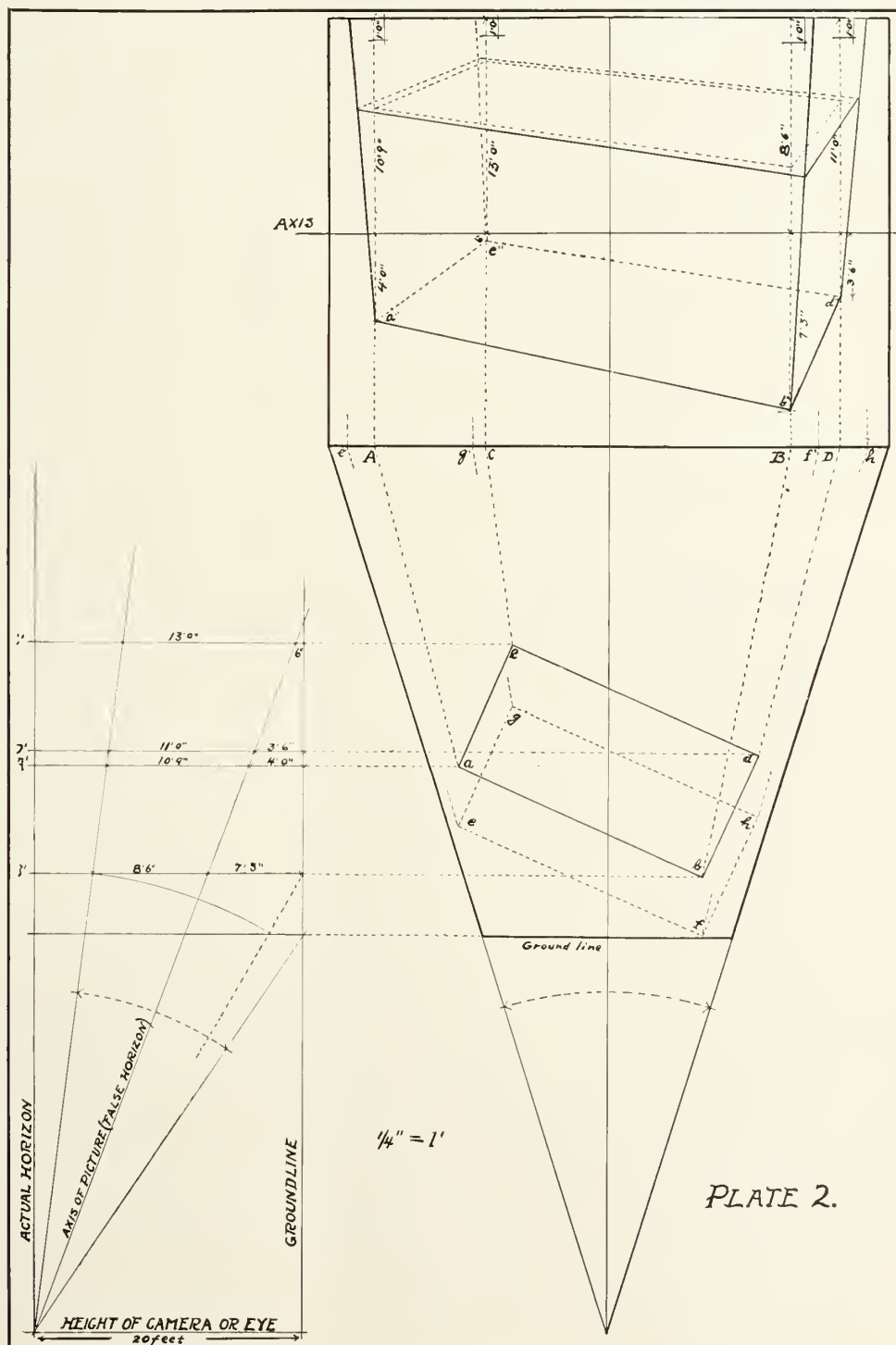
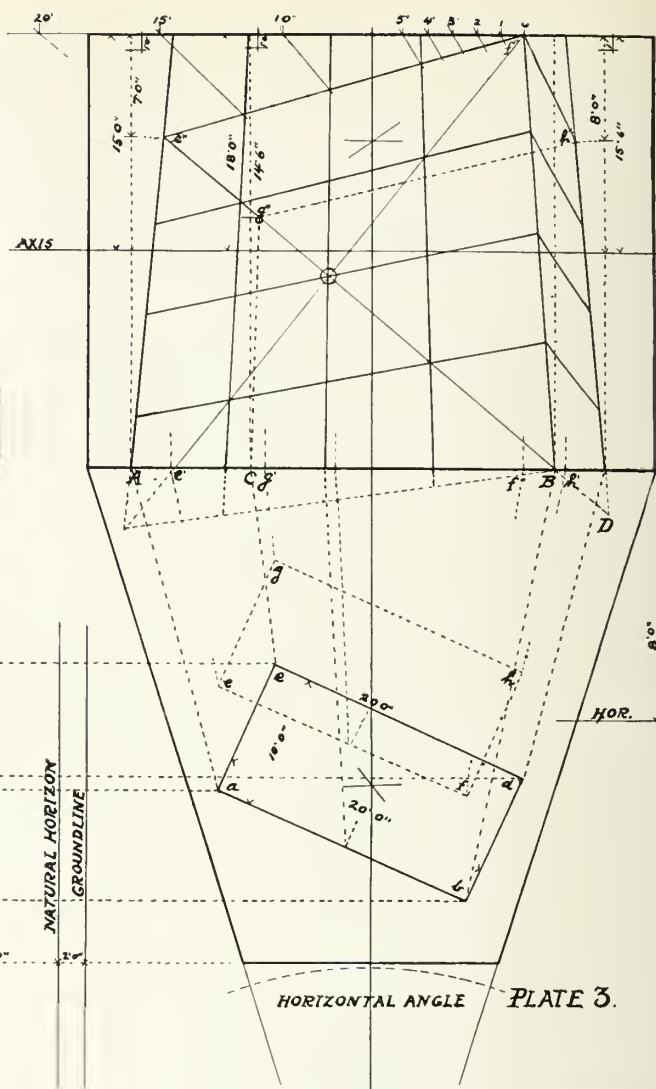
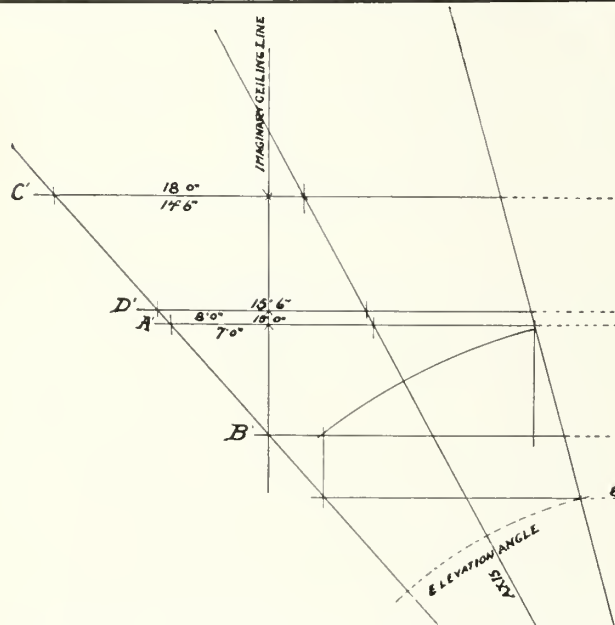


PLATE 2.

a, b, c, d , to A', B', C', D' , at the top of the vertical angle.

It will be seen that the distance between the upper vertical angle and the horizon **increases** with the distance from the lens (or eye); and that the apparent dimensions of objects **decrease** in the same ratio. Consequently, a point four feet below the horizon, at C' will appear less than the same distance will appear at B'.

If we place the $\frac{1}{4}$ -inch scale on the line C', we find the distance between C' and the horizon is 12' 3". Consequently, the distance between the same points in the sketch (line C, at the top) is the equivalent on an enlarged scale, and is the farthest point of the set. By dividing this distance, between C and the horizon, into 12 and $\frac{3}{12}$ th parts,



we get the perspective scale of feet **at that distance**, and one foot is indicated by the tick-off, at C. As everything below the horizon is four feet, four times down, from the horizon, of this tick-off, gives this farthest point in perspective, as shown at **c**.

As **B**, **b**, and **b'** represent the nearest point of the set, the apparent dimensions at that position appear greater; and when measured, the distance between **B'** and the horizon is 8' 0". The same space on the B line of the sketch, representing the same distance, is divided into eight parts and one part gives the scale of one foot for that position, as ticked off at B. This tick-off four times down from the horizon gives the perspective position for the nearest point of the set. The other points are secured in the same manner, the proper scale of one foot being shown at the respective points—**A** and **D**, at the top of the sketch.

By connecting the points a' , b' , c' , d' , we get the plan of the set in perspective, with all the lines vanishing properly to the horizon.

The elevation plan shows the block (or set) to be eleven feet high—in other words, everything above the horizon must be seven feet. Having determined the scale of one foot for every vertical line, we measure up from the horizon seven of those parts for the respective line and establish the top of the block (or set) at that particular point, e, f, g, h. By connecting (e, f); (e, g); (f, h); and g, h), we get all the horizontal lines properly vanishing to the horizon.

We now have a perfect representation of the block (or set) in perspective, corresponding accurately with the plan and elevation, and properly sug-

gested as to distance, proportion and effect. This, too has been accomplished without going beyond the confines of the sketch for vanishing or measuring points.

The student, who desires, may prove the problem by extending the lines and the horizon (if he has room on his drawing board) and he will find they meet at the proper points. If there are any errors, they will be due to discrepancies in the thickness of pencil points, inaccurate measurements with dividers, ect.; but the errors will be too slight to notice.

Plate 2—Descending Perspective

In this problem, we have something more complicated. The camera is no longer level; the lens (or eye) is deliberately directed downward and all the vertical lines vanish to a point away below—but where?

View cameras have been made with a swing-back in order to straighten the vertical lines. But the motion picture camera (or the eye) has no swing-back. It is questionable, too, whether the vertical lines should be straightened, for the "goofy" effect of the exaggerated perspective is dramatic and much to be desired.

The director now comes with the plans of a building and wants an idea of what the effect will be shooting downwards from the second story of a house across the street.

The angle is selected as shown in the horizontal angle, Plate 2.

In this problem, we have two horizons—the nat-

ural horizon, which we place at twenty feet above the ground; and the axis of the picture, which is directed downward. The lower vertical angle of vision cuts the groundline, as shown in the plan and elevation, and forms the base line of the picture.

Extend the horizontal angle and establish the proportions and dimensions, as in Plate 1. Next, extend by the dotted lines, the points a, b, c, d, on the heavily lined plan, to A, B, C, D, at the base of the sketch; then the same points a, b, c, d, across to A', B', C', D', onto the elevation angle.

It will be noted that the upper angle is considerably below the natural horizon, so we will now use the distance between the upper angle and the axis of the picture to secure the diminishing scales. The distance between these points on the line C' is thirteen feet, and between the axis and the groundline is six inches—the farthest point. The relative distances on the line B' are 8' 6" and 7' 3"—the nearest point; the other, A' and D' is correspondingly found.

On the dotted lines A, B, C, D, on the base of the sketch, we have the same diminished scales as in Plate 1, but, in this instance, measured from the upper vertical angle to the axis. The equivalent of one foot at each diminished distance is ticked off as shown at the top of the sketch near each respective line.

At point c'', (in the sketch) we measure down from the axis 6'', (as shown on line C' of the vertical angle: at point d'', 3', 6" down, as shown on line D' of the vertical angle: a'' is 4', 0" down: b'' is 7', 3" down. Connecting these points, in the sketch, furnishes the ground plan in perspective.

Now, the question arises: what is the dotted line plan e, f, g, h?

It will be observed that the camera (or eye) being directed downward, the base of the building is farther from the camera (or eye) than the part cut by the upper angle; and that the difference is equal to the distance between the points where the visual angles touch the ground, at the bottom, and the point where it touches the building at the top, as shown by the arc drawn from the upper point on B', to the ground line, with the lens (or eye) as the radial point. Consequently, the plan of the building, at that upper point, will be so much closer to the camera and proportionately enlarged. By extending the points e, f, g, h, by the dotted lines, to e', f', g', h', onto the base of the sketch, we get the degree of spreading of the lines at the top of the picture and the degree of vanishing of those lines at the base of the building.

It will be noted that, this building having no top or roof plan, the other horizontal vanishing lines may be secured by measuring up from the bottom of the building any equal number of feet, using the respective scale of each line—A, B, C, D, the inside dotted lines, at this upper plan, show the perspective difference between the top and bottom of the building as seen from such an angle.

Again, we have secured these complicated vanishing and measuring points without going off the confines of the sketch.

Having the dimensions on the plan and elevations, and having secured the vanishing scales, the accepted rules of perspective will enable the artist to put in all the details in their proper proportions and positions.

Plate 3—Ascending Perspective

Here we have a little more complicated problem, because the angle is shooting upward. As

shown in the elevated layout, no sort of plan, neither of the ground nor roof, is shown in the sketch. The camera is set low—two feet above the ground, and the lower visual angle is considerably **above** the natural horizon.

The question now arises: having no ground plan showing in the sketch, as in Plates 1 & 2, how are we to establish any vanishing lines? We can do so by **assuming** an imaginary ceiling line projected horizontally from the front where the upper angle touches the building.

After getting the frame of the sketch, as before shown, extend the points a, b, c, d, by the dotted lines to points A, B, C, D, onto the base line of the sketch. The next step is to find how the lines vanish upwards. A study of the elevation angle will show that the point where the upper angle touches the building is farther from the lens (or eye) than the lower point; and the distance between these two points is shown by the solid line arc: So that we represent this imaginary upper plan in perspective on the horizontal angle, as shown by the dotted line plan e, f, g, h.

By extending the points e, f, g, h, to e', f', g', h', on the base line of the sketch, we get the upward diminishing degree of the verticals A, B, C, D.

We must now find the vanishing degrees of the horizontal lines. The ground line and the natural horizon both being out of the picture, the only horizontal plane we can use is the imaginary line we have assumed as shown on the vertical angle. By extending the points a, b, c, d, to A', B', C', D', we establish the lines upon which to secure our measurements.

From C' to the axis we find to be eighteen feet and the division of the distance on the C line of the sketch gives the diminished scale of one foot, shown near the C line at the top of the sketch. The other measurements on D', A', B', respectively, are 15' 6", 15' 0", and their respective scales shown at the top of the sketch.

Going back to the imaginary ceiling line, at C', we find the distance between these two points to be 14' 6". Using its scale at C, on the sketch, and measuring down fourteen and one half of such spaces, we establish the farthest perspective point; g'': e'' and h'' are similarly found. It will be seen that B and f'' being intersected by the edges of the picture, no measurements are here needed. By connecting points (f'' - e''), (f'' - h''), (e'' - g'') and (g'' - h'') we secure a set of horizontal vanishing lines that represent the plan of the building in perspective at that particular position, i. e., the imaginary line.

But this one set of lines is not sufficient; we must find others—there may be a series of mouldings, cornices, windows, etc., to be shown in the sketch in their proper proportions and positions, and we need their respective perspective lines.

We find that in all perspective work, diagonals are indispensable in making divisions. Within the sketch, we have three points from which we may construct such diagonals—B, f'' and e''. Intersecting from B to e'' is simple but we must yet find that from f'' to the lower extension of the line e'' and A. To secure this, we determine the center of the building by extending this center from the ground plans; the point within the circle furnishes the intersection for the other diagonal from f'' down through e'. The lower vanishing line is apparent by the dotted line below the base of the sketch.

Along the top of the sketch, we show a well known method of dividing spaces in perspective.

(Turn to Page 29)

AMATEUR MOTION PICTURE DEPARTMENT



Behind the Scenes In a Film Library

By THEODORE F. COMSTOCK

(Editor's Note: Theodore F. Comstock, of Kodascope Libraries, Inc. of New York City, in the following article has written most interestingly on the subject of 8mm and 16mm library films. Familiar as he is with the problems of a Film Librarian, we believe Mr. Comstock's enlightening remarks will go far in bringing about better understanding and closer co-operation between film libraries and amateur movie enthusiasts.)

WHEN a customer, having read the enticing descriptions in the film catalogue, makes his selection and rents the pictures which he decides are suitable for a particular occasion, he naturally assumes that those films will have been properly inspected and will be in fit condition to show. There is, however, a vast difference in the quality of the inspection and careful maintenance in different libraries, and unless one is dealing with a library in which film maintenance is properly stressed, he may be greatly disappointed.

Anyone who has ever attempted to entertain an audience with movies and has had the entertainment constantly interrupted by film breakages, or marred by jumpy pictures due to strained perforations, or has subjected his audience to the aggravation of excessive scratches; dirty, oily film; obviously missing sequences; titles too short to be read throughout, and the numerous other annoyances that can be caused by inadequate inspection and maintenance, will realize that such entertainment does not please.

Assuming that his projector was not out of adjustment, just why was it he had so much difficulty and disappointment in the showing of those films? The obvious answer is that they were not in fit projection condition when he rented them, and the probability is that although his use of them has added to their defects, they will be sent out to the next customer in just their same poor condition.

From this it will be seen that the proper inspection of films is an important consideration to the renters of films, and it occurs to the writer that film renters may be interested in the methods we employ to maintain the good condition of the films in our library.

In the first place, all new films received from the laboratory are first inspected manually and then projected, to make sure that they are in perfect condition, free from mislights, in proper continuity, and with proper length titles, etc. In the case of sound films, this inspection also checks the sound for clearness, volume and proper synchronization.

Only after the films have passed this inspection, are they accepted for Library use. A considerable number are rejected for cause.

Upon the return of the films from each user, they are inspected and rewound at the same time. Film

users are requested not to rewind films after projection. This saves both them and the library trouble, for if the customer does rewind, the library has to unwind the film again before making its inspection.

The inspection process consists in rewinding the film, holding it edgewise between the fingers of an expert inspector, in such a manner that the fingers do not touch the emulsion picture surface or the sound track, but do feel both outside edges of the film to check for cuts or partial breaks.

During the rewinding and inspection, a sharp lookout is also kept for scratches or oil on the film. Oil or dirt is removed at once by running the film through a special cleaning machine, which first immerses it in a bath of carbon-tetrachloride dissolving all grease and dirt, and then mechanically polishes both the emulsion and back of the film against soft, clean, flannel-covered rollers. Scratches, if serious, or strained perforations, call for a replacement of the affected portion of the film. This is ordered from the laboratory and the print is held out of use until the replacement has been made. In case of damage, the customer is notified and in aggravated cases a charge is made.

The inspectors insert an inspection slip into the container with each reel of film, and make a daily



Typical Home Movie Show

report of all films inspected. Such a thorough inspection system adds to the cost of operating a film library, but any user who has been subjected to the embarrassment of endeavoring to project less carefully maintained film before a critical audience, will feel that this slight extra cost is more than justified.

All library films are made directly from negatives, just the same as all films used in the theatres. They are not made by the reversal process like amateur movies, and have not the same tendency to become brittle and need humidification. Durability tests made on library films over a period of many years show no apparent deterioration. All films are kept in dust-proof, though not air-tight, containers. A clip or band is put around each film on its reel, so that the outside layers do not become loose in the can and thus become marred in shipping.

With the best of care and inspection, splices will occasionally come apart during projection. There seems to be no human possibility of avoiding an occasional break, even in the best theatre showings. When one does occur, it is not advisable for the operator to stop to join the ends of the film together, since it can be run by rethreading at the break and lapping the end of the rethreaded portion underneath a turn or two of the previously projected film on the lower reel. This will enable the rest of the program to be shown. Unless a customer plans to run the film a second time, it is better not to attempt a repair at all. On inspecting the subject, the library will find and repair the break.

If, however, customers prefer to join the ends together, it is best to use a small piece of adhesive tape which should secure one end to the other with the perforations exactly together, and is without any subsequent danger to the hands of the film inspector. Under no circumstances use a paper-clip or a pin. Either can do serious harm to the projector, and the pin has been known to badly lacerate the hand of a film inspector when passed rapidly between the fingers.

So much for the care of the films by the rental library. As to their care by users, I would mention first the necessity of maintaining the projector in proper adjustment. Beyond that I cannot do better than quote the "Film Prayer" by A. P. Hollis:

The Film Prayer

I am film, not steel, O user, have mercy. I front dangers whenever I travel the whirring wheels of mechanism. Over the sprocket wheels, held tight by the idlers, I am forced by the motor's might. If a careless hand mistreads me, I have no alternative but to go to my death. If the pull on the take-up reel is too violent, I am torn to shreds. If dirt collects in the aperture, my film of beauty is streaked and



Showing Amateur Film Exchange

marred, and I must face my beholders—a thing ashamed and bespoiled. Please, if I break, never fasten me with pins which lacerate the fingers of my inspectors. Don't rewind me—my owner wants that privilege, so that he may examine me, heal my wounds, and send me rejuvenated upon a fresh mission.

I travel many miles in tin cans. I am tossed on heavy trucks, sideways and upside down. Please see that my first few coils do not slip loose in my shipping case, and become bruised and wounded beyond the power to heal. Put me in my own can. Scrape off all old labels on my shipping case so I will not go astray.

Speed me on my way. Others are waiting to see me. The next day is the last day I should be held. Have a heart for the other fellow who is waiting, and for my owner who will get the blame.

I am a delicate ribbon of film—misuse me and I disappoint thousands; cherish me, and I delight and instruct the world.

RIGHT OFF THE REEL

By F. HAMILTON RIDDEL

Kodachrome Haze Filter: Color filming should always be practiced with exactitude. And there are photographic conditions, encountered in filming certain shots, which should be observed by movie makers in order to obtain best color renditions. We quote the following from the Kodachrome instruction book: "Ultra-violet light records in the Kodachrome process as violet; therefore when there is an excess of ultra-violet, which may occur in extremely distant scenes, snow scenes and those taken at high altitudes, the Kodachrome Haze Filter improves color rendition.

Furthermore, on a gray day and in the shade the light is colder in tone, and the Haze Filter imparts a warmer tone to the colors." The Kodachrome Haze Filter is colorless, is available in mounts to fit various lenses, and causes no change in exposure.

Negative: Movie makers using the negative-positive film system are often tempted, for one reason or another, to project their negatives. The careful cine worker will never do this. Since a negative is your original record of an event that in most cases can not be retaken, it is foolish indeed to project nega-

tive film. Examination of negative film, for editorial purposes and so forth, can be had by the use of a film-viewer, an accessory which will not cause damage or possible scratches. Temptation to project negative is best avoided by immediately coiling all negative film on a wooden core, and **not** onto a projection reel!

Processing Drum Note: Amateur movie makers, who contemplate processing their own films with home-made apparatus, will do well to give particular attention to correct construction of a film drum. To withstand laboratory service, such a drum must have very **rigid** construction. The cross-slats, on which the film is wound, must have **rounded** corners. Sharp corners cause annoying creases in film which, in the case of negative, interfere with good printing contact; or with prints, cause poor out-of-focus pictures.

Film Chamois: The best quality chamois obtainable is never too good for use with motion picture film. In cleaning and removing excess moisture from a movie film which has just been processed, it

is very easy to mar the delicate, moist emulsion. Only a good quality chamois will give satisfactory results. Such can be obtained for about \$1.50. Don't allow yourself to be tempted into purchasing cheap chamois imitations, or inferior quality, as it is false economy and will very likely result in much ruined film.

Hallowe'en Filming: That good, old night when Spooks abound and do their tricks—Hallowe'en—is also a night for the cine camera to do its tricks, too! And that's not all. It's **the** occasion to try your hand at making silhouettes. Regular black and white film is best suited for silhouettes and will do nicely for your animation or stop motion work. All sorts of camera tricks can be tried out, with eager assistance from the family youngsters as your stooges. Afterwards, when you continue photographing the Hallowe'en party, change to color film for your "straight" shots. For the ambitious cine experimenter, Hallowe'en is a three-in-one night: animation, silhouettes and color work being accomplished at an apt time.

Questions and Answers

By F. HAMILTON RIDDEL

1. How many individual frames are there in 100 feet of 16mm film?

Since there are 40 individual frames to each foot of 16mm film, 100 feet contains 4,000 separate views.

2. At what speed does Light travel?

Light travels at a velocity of 186,000 miles per second, traveling at a much greater speed than sound. This is evidenced by the fact that we always see a flash of lightning before we hear a crash of thunder.

3. What is halation?

Halation, the sworn enemy of every movie maker, can be defined as a halo of light seen around the image of a bright object in a motion picture print. It is scattered light, most often met in photographing interior scenes; and white buildings, etc., in exterior work. Modern films have special non-halation coatings to minimize the effect of halation, which are most efficient. But this does not mean that one can be careless, for example, in allowing the rays of a photoflood bulb to shine directly into a camera lens. Interior camera set-ups must always be arranged carefully to avoid halation.

4. What is the base of safety film made of?

The base of 8 mm., 16mm., and other size safety films, is cellulose acetate. This is a non-inflammable material.

5. I contemplate doing some animation work with toy animals and circus clowns—how can realistic movement be obtained?

Animation is one of the most interesting types of movie making, but it must be painstakingly done to be effective. Action is obtained by moving the miniature figures slightly between each frame exposure. For successful animation, it is necessary to study and analyze motion. This can best be done by studying, in a film viewer, a strip of regular film; or better yet, a cartoon subject, in order to determine the correct amount of change of action in each frame. Animation shooting takes time—only a comparatively few feet of film per hour can be taken—but the screen results are very worthwhile.

6. Why do my pictures appear "jerky" on the screen?

Assuming your projector to be in perfect order, your pictures appear "jerky" because you did not hold the camera steady while making the picture. This is so often a common fault witnessed in amateur movies. During the entire time of exposure, great care must be exercised to **hold the camera steady!**

7. I have some very old 16mm film, not in the best of condition, which I should like duplicated. Is this possible?

If your original film will run through a projector, yes. However, the duplicate will carry the transferred scars and mars of your original. This cannot be prevented, but its effect can be minimized by carefully preparing your original for the duplication process. That is, by cleaning the film and removing any suspicious looking perforations.

Note: As a service to amateur movie makers, we extend a cordial invitation to write in questions which will be answered in this column. Address all such letters to:

Questions and Answers Column
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CINEMA TIDINGS

Amateur Motion Picture News

New Line of 16mm Keystones: Keystone Manufacturing Company has recently announced a new and improved line of 16mm amateur motion picture equipment, together with important price reductions.

Two basic camera models are now offered amateur movie makers, designated as Keystone A-3 and A-7. The model A-3 is a three-speed instrument, including 8, 16 and slow motion, and is available either with an F 3.5 or F 1.5 lens. The Keystone A-7 camera has even a greater range of variable speeds—8, 16, and intermediate speeds all the way up to and including slow motion. The A-7 is available with a standard F 2.7 lens or an F 1.5 speed lens.

Three new Keystone projector models are offered which, according to announcement, will satisfy the needs of family use or requirements of schools, churches, lodges and average size indoor gatherings. The Keystone model A-72 projector is equipped with an F 2.5 projection lens and 300-watt lamp. The A-75, with F 2.5 lens, uses the more powerful 500-watt lamp. And the deluxe model A-81, featuring a large aperture F 1.6 auditorium projection lens, is equipped with a brilliant 750-watt lamp. With the latter model, it is claimed, a 14-foot width picture can be obtained at a throw of 75 feet. Each of the three Keystone projectors is equipped with a 2-claw film movement, which grips two sprocket holes instead of one. All of the projectors are attractively finished in baked brown wrinkle enamel.

Copies of folders, illustrating and describing in detail the new line of 16mm Keystone equipment, can be obtained by addressing a request to Keystone Mfg. Co., 288 A Street, Boston, Mass.

New Kodascope Libraries Catalog: Just off the press is the new Fifth Edition 16mm Kodascope sound film Catalog, an up-to-date listing of quality library films which are available on a nominal rental basis from Kodascope Libraries, Inc. The new catalog has been enlarged, over former editions, to 79 pages and is profusely illustrated.

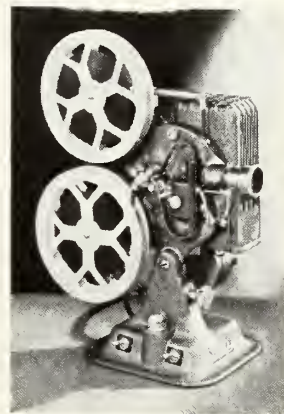
The Fifth Edition lists many new talking-film subjects, which have been added to the library, on travel, adventure and sports; animated cartoons and comedies; as well as dramas and features, many of which are exclusive Kodascope Libraries subjects. Among the latter are Walt Disney's famous "Mickey

Mouse" and "Silly Symphonies" cartoons in sound.

16mm sound projector users can receive a copy of the new Fifth Edition Kodascope Talking Film Library Catalog, by addressing Kodascope Libraries, Inc., 33 West 42nd St., New York City.

B & H Professional Printers: Of interest to the advanced movie-maker is the current announcement,

Model A81
Keystone
Projector



in connection with 35mm professional films, that a large order of automatic sound and picture printers is now being shipped from the Chicago factory of Bell and Howell Company to the West Coast studios of Paramount and Columbia.

Both the picture and sound track are automatically reproduced on these machines at one operation, retaining it is said all of the depth and definition of the original film and without loss of the full range of the recorded sound, formerly encountered. As a result, pictures can be released which combine photographic excellence and faithful sound reproduction.

Unlike the printers formerly used, these automatic machines are entirely independent of the skill of the operator. Although running at higher speeds, these printers are equipped with interlocking controls and safety devices which it is stated makes them entirely foolproof. They will stop instantly and automatically in case of film breakage, lamp burn-outs, power-line variations, or failure of the air and vacuum-supply lines which vacuum-clean the film while it is being run.

"ELEMENTARY PHOTOGRAPHY," by C. B. Neblette, F.R.P.S.; Frederick W. Brehm and Everett L. Priest, B.S., M.A. This is one of the best little volumes for the amateur, whether for club or home, that has appeared in a long time. This book is

chock full of practical suggestions on how to make good pictures, how to develop and print them; it tells about lenses, lantern slides, making enlargements—and in fact just everything that would be of interest to the amateur.



MAX FACTOR'S

NEW

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A REVELATION IN FACIAL MAKE-UP

ARTIFICIAL SUNLIGHT SIMPLIFIES TECHNICOLOR EXTERIORS

(Continued from Page 14)

flectors. For all of the other scenes, we diffused the direct sunlight with overhead scrims, and modeled the faces and forms of the players with "H. I. Arcs," filling in the shadows with a soft flood of light from the "Side Arcs." Almost always, the scrim overhead was of at least double thickness; sometimes, even, we used a triple or quadruple layer of netting. For the ordinary, intimate shots the scrims used were of ordinary, small size. But on the larger shots we used what is, I believe, the largest scrim ever flown on location: two, and sometimes three thicknesses of the dark netting, and measuring 50x60 feet in size. Underneath, we could work almost as freely as though we were on a studio stage, and with vastly more precision—thanks to the flexibility of the "H. I. Arcs"—than we could have hoped to do with reflectors.

Occasionally we found it advisable to use reflectors for an outlining back-light. In these shots, we had a real chance to prove whether or not the lamp-designers had been over-confident in saying their lamps matched the color of sunlight. The general illumination of the shot was heavily diffused natural sunlight. The back-lighting was strong, reflected sunlight. The "fill-in" light came from "Side Arcs," usually diffused with one or two silks. And the modeling-light came from "H. I. Arcs" fitted with their straw-colored filters. If any of these sources departed from the chromatic standards of natural daylight, it would certainly show up on the screen, for Technicolor, like most color-processes, is sensitive to difference in the color of light which would escape the eye. But on the screen, nothing in these scenes reveals that some of the sunlight was natural and some artificial.

As we made these scenes, we found another, rather unexpected advantage to using arc-boosters. This was the fact that the players found them easier on their eyes. After all, it is far from easy to look natural while facing a battery of blinding silvery reflectors. In "Ramona" we found this especially noticeable, for the star, Loretta Young, has eyes that are very sensitive to strong light, while the leading man, Don Ameche, was fresh from radio, and was totally unaccustomed to keeping his eyes open in a strongly glaring light. Both of them, I think, had been rather terrified by the wild rumors they had heard of the strong lights needed for color. Certainly it was a visible effort for both of them to keep their eyes natural when we used reflectors. But both of them were quite comfortable when we used the arcs.

Working outdoors, as we did, brought another problem in lighting when one important sequence—that of a fiesta—called for night-effect lightings on a large set. Working on a stage, we could have done as we did in "Dancing Pirate": simply used a lower key of light, with the high-intensity spot-lights "raw"—that is, without the filters that corrected their light to match daylight—and with here and there a lamp or two fitted with a blue gelatin filter to give a hint of moonlight blue in the back-lighting. Obviously, we could not do that under these circumstances. So we kept to our normal style of lighting with diffused sunlight and arcs, and produced a slightly bluish cast overall by using a blue filter on the lens of the camera. Where the warmer note of lamplight or candle-light was required, it was produced by using the over-volted

"Movieflood" Mazda globes in Junior and Senior "Solarspots."

In mentioning all these things which combined to make "Ramona" what the critics have called a finer example of what natural-color cinematography can be than were its predecessors, the usually unheralded achievements of the Technicolor engineers and laboratory experts must not be overlooked. The Technicolor process of today is by no means what it was a few years ago, when the three-color system was first introduced. In those days the cameraman was severely restricted in his lightings. Today he can shoot color with almost the same freedom he would black-and-white. Every phase of the process has gained in flexibility.

With all these improvements the laboratory gives us, not merely as good a print as the older requirements permitted, but a much better print. For this, J. A. Ball, Gerald Rackett, and the others in the research and processing plants deserve a world of credit. In fact, the real heroes of this steady improvement between one Technicolor release and the next are these men in the laboratory, and the engineers who, like Peter Mole and Elmer Richardson, give us better tools to use on the set. What these men do, makes it possible for each Technicolor cameraman to do his bit in proving to the world that not only is color a more expressive medium than monochrome, but it is also one as easily and efficiently worked, once its fundamental technique is learned. And as each Technicolor production is released, it is better than those that went before. "Ramona" is, I hope, a superior example of color-technique and color-artistry than were its predecessors. The next color release, and the next, and the next, will undoubtedly surpass it, just as it surpassed the others. So it will go until the engineers, laboratorians and the cinematographers together have made perfected color more than a press-agent's phrase, and color-filming itself as familiar—and as widespread—as is today's black-and-white.


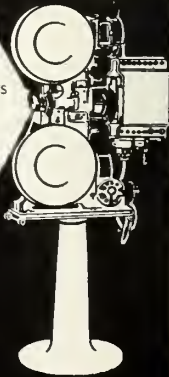
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IMPROVING DAYLIGHT AND OUTDOOR PHOTOGRAPHY

(Continued from Page 7)

of the flash, as previously noted, should be gauged by the distance existing between the lamp and subject. The foreground is relieved of under-exposure by the flash, and by arranging the flash reflector, a variety of lighting arrangements can be secured. A relatively small lens opening will be necessary to assure depth of focus, but of course this depends a great deal upon the nature of the scene or subject to be photographed. In synchro-sunlight photography, the foreground is often the principal subject matter, hence new creations can be evolved which will result in unusual and beautiful photographs.

There is hardly any subject or scene which cannot be improved by using a speed gun. Thousands

of new effects will come to mind. Naturally it is not suggested that the synchro-sunlight technique be used on all exposures. Like everything else, it has its place and purpose, but it can be abused and wasted, too. On dull days, for snow scenes, beach and landscape scenes, for the placement of long shadows where they are wanted and for many other purposes, the new technique will be found stimulating and practical. Try this new form of photography—it gives a sense of freedom from ordinary photographic difficulties which is highly satisfying.

A lot of credit should be accorded the Kalart Company of New York City for bringing this new photographic method to the general public.

BEHIND THE GROUND GLASS

(Continued from Page 9)

(the photographer is sufficient; he's the original necessary evil).

Much of the above applies to all types of photography covering pictures of individuals and briefly describes character study procedure. Each photographer, being as individual as his subjects, eventually assembles his own particular technique, though all agree on fundamentals.

Characters

This branch of photography is a highly specialized one. Here there are many new factors to be considered. For instance—**Types** and the series of characters the subject may portray governed by his ability and appearance; unusual features of dramatic lighting; lighting effects **around** the subject; trueness of characters; authenticity of period costuming; setting; make-up; age and nationality of each character. All of which contribute to correct **atmosphere** which in turn **assists the artist in his characterization**.

Here is where the photographer's capacity comes into play. He must be director, costumer, property man, electrician, and even dialogue director as he must lead the subject into the different characters.

The photographer's creative sense is challenged, as others can often visualize characters the actor can portray, better than the actor can himself. Again it is perspective. One of the greatest assistants in this is to be a close student of characters in life, as well as of the portrayals by great actors of stage and screen, with the special objective of later seeing your photographic subject in similar characters and in wide variety.

The special significance to exploring for all possible characters has been proven. A widely diversified series of character studies is the best possible insurance against that much dreaded form of theatrical suicide known as being **typed**. A condition resulting usually from an actor's permitting himself to be cast in several successive parts of one type only. It is inevitable for some, whose mold of face and general characteristics **invite typing**—yet other actors deserve a wider range of activity.

Stillman states that the proper procedure in taking character studies was explained in the article in the August issue of The International Photographer entitled, "Into Pictures—Through Pictures," which, in brief, is to confine your taking to not over three

different types of character studies at one sitting. This permits the subject the necessary time to get properly into character. The results will justify the means. Various actors are doing likewise with their respective photographers.

Several private enterprises are developing a plan for the actor to own his own 35mm screen tests, made under satisfactory conditions, which he may have reviewed by casting directors. Having character study stills available representing the character in the screen test will result in better cooperation by casting directors.

In the four character studies presented of the screen actress, Myra Marsh, we show how a beautiful woman may be photographed from a "Straight", to extreme yet convincing characters. These characters are accomplished entirely by lighting effects, setting, costuming and expression, with practically no make-up other than a little cold cream applied to enhance highlights.

Let it be understood that studies of an individual, portraying characters of this type require considerable skill on the part of both actor and photographer and are far more difficult to accomplish when the subject is sitting in front of a still camera without any thought continuity emanating from a play or motion picture script and without the helping hand of the director.

Stills

The difficulties for taking adequate stills on the motion picture set are proverbial. However, there is a marked improvement in the major studios and on the more important pictures. Motion picture companies are coming to realize that the "still" has too direct an influence on the box office to continue to permit the confusion and noise which invariably follow a motion picture action scene. Yet this is the time the still-man is requested to "move up for a still." The characters, setting and lights being practically set the operation requires only a few moments—if **unhindered**. The question is not—"Can it be taken?" but rather, "**What are you getting?**"

The motion picture companies which give their still-man the same cooperation as given the motion picture cameraman, invariably receive more effective stills. The still-man should be given **silence** and **right-of-way for the few moments required**. The actors also work to better advantage. As a result fewer stills are lost, thus resulting in time saved in the

long run. **Time** on the set is another word for **money**. **Time lost** is the largest single expense item. But whether it takes **more** or **less** time to do it **right**, it must be remembered that the **still** is an important link which holds a motion picture's ultimate success at stake as it is used to sell the picture both to the theatre and the public.

The negative for photographs is commonly **over** retouched—a pencil and knife process ordinarily to remove face lines and blemishes, which also often eliminates personality. Retouching is prompted of course by the common desire to be flatteringly good looking.

This policing or face cleaning, this wart and mole clipping, or shall we say mild cheating, can be forgiven if used within reason when the photographs are to be used primarily for social purposes. Custom here has decreed that good looks is the objective be it entirely natural or not.

Even though requested, it is a grave injustice to the actor, as well as being unethical, to perform **photographic surgery**—changing contour of face or body beyond the point that costume and make-up will not cover. The human eye or motion picture camera will later detect and expose such practice.

Nothing can so injure an actor with a casting director as the discovery or suspicion that other than with make-up, the subject has been made over through so-called retouching.

Proper lighting and posing will overcome the necessity for a great amount of retouching. Remember that every subject has a **best view**.

The manner of **printing** a picture is next in importance to the **taking**. Be sure you have all the detail in your print contained in the negative. Ord-

inarily moderate diffusion should be confined to portraiture not to characters or stills, as defined.

Should you desire heavier printing for a portion of the print, it is possible to give extra counts in exposure of a certain area, by blocking out the remaining area.

By printing a given negative on the several different qualities of printing stock, it is possible by comparative study to learn which stock to use for certain pictures.

In conclusion and summary: Remember that realism in character studies results from the **entire** characterization, of which the face is just a part. The expression in both face and body must result from **thinking the desired situation**.

"Behind the Ground Glass" could be expanded to book length, however, in the attempt to hit the high spots in photographing character studies, if we are guilty of some glaring omission, we hope our contemporaries will prompt us.

The public is yearly becoming more discriminating in what is good photography and motion pictures can be given the major credit. We are favored in and about the Hollywood area with having a goodly number of excellent and reliable photographic studios, and although we have our share of "Camp Followers" who would take all and give nothing, we believe the general trend of standards and ethics in all departments, including motion pictures is definitely on the up grade.

The camera is not quite a mind reader—yet. But with new camera inventions, sharper lenses and new lighting discoveries coming on continually, photography is increasingly responsive to the building of technique for recording true character.



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—Garden of Allah—

—God's Country and the Woman—

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Hollywood Offstage

By EARL THEISEN, *Associate Editor*

Honorary Curator Museum Los Angeles

BACK of the scenes of the Hollywood Glamour Factories is a story. Into every romantic movie scene goes the sweat of scores of men and women who work with tools and things and who are the real heroes in getting the millions of miles of film to the screen.

There is a story in these technicians, carpenters, blacksmiths, dressmakers, the actors when not before the camera, and the other laborers because they do the job, not so much for the Saturday paycheck, as the satisfaction and fun of seeing the show go on and seeing their work take shape under their hands.

I do not know why it is so in the movie industry more than elsewhere that people really work for the fun of it and the fact that they are paid for the efforts seems secondary. So many things seem contrary behind the studio walls.

When I was asked to bring out the story of these unsung heroes and tell of the new equipment, the new developments, the behind the scene anecdotes, I was pleased.

C. B. (that's De Mille) said one day during the filming of his current film, "The Plainsman", that: "The audience never realizes how much is done for the film. Even with mob scenes where all seems confusion, it is not disorder at all, but what may be called intelligent confusion where everyone knows exactly what he is doing." That is the motion picture; they seem nuts at times, but the results, well, the results.

Jack Dawn, the makeup boss at M. G. M. has evolved what he calls the "makeup blues." Working on panchromatic makeup he has hit on the idea of applying the makeup under blue neon light. He claims this gives a coloration to the makeup that is similar to the way it will photograph. The blue neon illuminates the makeup application in a monochrome similar to that of the black and white of the photographic emulsion.

Blacksmiths are scarce. In filming "Hopalong Cassidy Returns", a man who could shoe the horses on the location trip in the high Sierras was needed, and one had to be located. Two hundred miles away one was found hid away in a backwoods; a truck picked up his anvil which was pitted and hollowed from wear during the "good old days" before the auto. His bellows, forges, and hammer which was no longer shiny from use, and what was left of the oldster himself was loaded on the truck, carte blanche in accepted movie fashion, and he was in the movies.

The technicians at M. G. M. were put in a dither the other day when the romantic Garbo went into a

sweat because of heavy costumes she had to wear in the winter scenes of "Camille." So our unsung heroes invented a portable ice box for the hot Garbo. The refrigerator called the "Garbo-Cooler" is eight feet square and on top of it is loaded about a truck load of ice. (The publicity department says 2,000 pounds, which a Robert Taylor fan says is not excessive if the Taylor, also appearing in Camille gets in there with his winter clothes). Anyway, an electric fan sucks the cooled air off the ice into the ice box. It is set on steel rollers and a yes-man who never gets any publicity on his perspiration pushes it around.

In order to give more elbow room for an extensive film program, Warner Brothers Studio is expanding. Two new sound stages, number 19 which will be 135 by 160 feet and number 20 which will be 315 feet long by 120 wide will be constructed. You could get lost in a building like that. Plans are laid for a new office building constructed in a U-shape, and housing seventy offices, new dressing rooms, technical and research buildings, new camera department, crafts building, new prop rooms and truck docks, new nursery building entirely glass enclosed, wherein will be grown exotic tropical orchids and sunflowers and such things. Not to be overlooked is the addition to the restaurant for larger food cooking vats and more elbow room in the "green room," dining room.

By the way, from 12 to 1 or thereabouts is the most important time of Hollywood's day, not because it's time for lunch or relaxation, but because that is the time when the course of movie history is determined. That is when movie decisions are made, films are cast; that is the time for the columnists to gather their pearls of wisdom and the news for the world gathered.

In reality the lunch rooms are conference rooms. At one table C. B. will be laying out plans for the afternoon's shooting, at another King Vidor will be talking and planning with his editor, at another an extra will be planning which bills to pay or how to

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get in the director's eye; the star will be looking with an horizon eye while planning, no doubt, a better way to deliver some dialogue "business" while the hurrying laborer and office boy hastily dart in and grab a sandwich. All mix and elbow each other whether high or low. The lunch room is no place for glamour and names in lights do not mean so much.

A check of "call Sheets" indicates the movie stars get up and report for work before the world believes they get home from the mythical Hollywood party. Claudette Colbert got up on this day at 5:30 o'clock; Glenda Farrell at 6:30, and so forth, and there is no luxurious arrival at nine or ten with a fanfare as the fans love to believe. When the movie star first gets to the studio she reports to the makeup department when for anywhere for half to three hours she sits to get the makeup applied. Then she must get into costume, then the hairdresser, and then here and then there. All the while they are studying a script. She quits about six o'clock and many, many times, if things go wrong they work all night. (Of course, some lowly fellow whose name never hits the credit title must get there ahead of her to unlock the doors, while the makeup artists, lunch counter guy, and so forth have been getting things polished for the arrival.)

With Hollywood going into a cycle of costume films, the Wig Department of Max Factor has had to go without lunch and take up its belt another notch or two in order to get the thousands of wigs ready on time. The many recent costume films have each required a special type of wig made to fill both the camera needs as well as the historic authenticity. One camera need that was solved recently was the Technicolor wig. All grey hair when filmed in Technicolor photographed with a bluish cast, and of course, that would not do. So the collective heads of the Max Factor wig department turned grey to find out that a slight off color would photograph right.

The hairlace wig that photographs like real hair and the line at the edge of the wig is not picked up by the camera was also developed by them for the movies. Into a lace is tied each individual hair. The workers in making the lace wigs earn their paycheck by spending the hours fixing and knotting hair after hair into a piece of lace. In doing this their

hands do a quick twisting motion and there the hair is all neatly tied into place. I tried to count the hair one of the girls tied in a hour but when I got around 200, I became tired. To me the work seemed like monotonous drudgery, but they hum and sing at it.

Bell & Howell is shipping on order, a \$200,000 order mind you, of motion picture printers to Hollywood. This is the largest order of movie apparatus of any one shipment, and it is for sixteen automatic sound and picture printers which are going to the Paramount and Columbia film laboratories. M. G. M. is already using a battery of ten of these printers.

These new printers which print the sound and the picture at one operation without loss of detail and definition of picture quality, operate at higher speeds, are automatic, and equipped with foolproof devices and eliminate manual control. They clean the films and so forth while the printer may take a nap.

Five years and a cost of \$300,000 were spent in the development of the apparatus.

About a new movie theater. Glen Duerfeldt, visiting here from Nemaha, Nebraska, told me about a novel way of getting the films to the public. The merchants in this small town which is too small to sport a theater get together and chip in a couple dollars each for a free Saturday night show. The county officials furnish rough planks which are used for seats and the money collected from the merchants goes to hire a travelling showman to run his films, which are not too old. On Saturday night the farmers come to town early to visit and stand around and "chaw" until showtime when they migrate en masse to the free open air show. Of course while visiting and the waiting is going on they spend the nickels with the merchants. Before the free show idea came along, the farmers went some miles to a neighboring town that had a show. Glen, who told me this also told me he had to buy twenty gallons of gas when he was here in order to find the home of Bing Crosby because his wife is a Crosby fan. He thought her fandom was o.k. because it gave her something besides waving corn tassels to think about.

School has opened and the world's smallest school at Columbia Studios with its two pupils also started the fall semester. One pupil, Edith Fellows, thirteen years old, and second, tiny five year old

(Turn to Page 30)

A NEW SYSTEM OF PERSPECTIVE

(Continued from Page 19)

By taking a convenient point on the horizon (in this instance the horizon is eight feet below the base of the sketch) extend a line from this point through *e''* until it intersects the line at the top of the sketch: Knowing, from the plans and elevations, the dimensions between *f''* and *e''* are twenty feet, so must the distance between 0 and 20 be the same measurement. Divide this space into any desired divisions—1, 2, 3, 4, 5—10—15 and 20 feet. By converging all these divisions to the point on the horizon and ticking off the intersections on the vanishing line *e'' f''*, gives the proper diminishing of these spaces. By connecting various other diagonals (only partly shown in the sketch) any number of vanishing lines and measurements may be had.

By measuring the spaces between the horizontal vanishing lines, from the bottom to the top of the sketch, we see that these spaces diminish properly in the ascending perspective, and prove that the

building is correctly fore-shortened, as the result of shooting upwards.

We may here offer the objection that this system may be well enough for projecting a perspective rendering from ground plans; but what if we have to design a sketch without a plan?

The answer is simple. Practise shows that in executing a perspective sketch we must either resort to the accepted rules of perspective or start out by faking. It is simple enough to secure that first vanishing point, but the second point must be accurately established in order to give a perfect illusion. Faking means a great deal of juggling of lines, many erasures with an accompanying loss of time.

It takes but a few minutes to layout a simple plan of the proposed sketch, establish the various points of that plan, in perspective, after which the rest is comparatively simple.

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MISCELLANEOUS

THE INTERNATIONAL PROJECTIONIST, a monthly magazine published in the interests of the projectionist. Interesting, instructive. Yearly subscription U. S. and possessions, \$2; foreign countries, \$2.50. James L. Finn Publishing Corp., 580 Fifth Ave., New York.

WANTED—To know of the whereabouts of motion picture relics, documents, or equipment of a historical nature for Museum purposes. Write Earl Theisen, care of International Photographer, 1605 Cahuenga Ave., Hollywood.

HOLLYWOOD OFF STAGE

(Continued from Page 29)

Patsy O'Connor and Gertrude Vizard, the one woman faculty. Each of the studios must maintain instruction for youthful contract players.

Old "Dinah", a seventeen year old mule has been kicking up a lot of fun for the Hal Roach comedies and has been before the camera for fifteen years. She appeared in the first "Our Gang" comedies.

About 1500 flash globes were used by Hollywood photographers in obtaining pictures of Dick Powell and Joan Blondell during the week preceding their marriage. Those photos flashed to all corners of the world.

For the film "Crack-up" at 20th Century Fox, the studio is spending \$25,000 to make a working duplicate of the Amelia Earhart "flying laboratory." The airplane, like Miss Earhart's, will be equipped with all the latest aviation instruments, just for movie authenticity.

New Apparatus, Photographs Soft Tissues of Body

HOLLYWOOD PHYSICIAN PATENTS AMAZING DISCOVERY—INTERNAL ORGANS PICTURED*

(Is this a New Field for Cameramen?)

By the Associated Press

(Dr. Ruth B. Drown, of Drown Laboratory of Radio Therapy, Los Angeles, has just returned from a sojourn in Washington, D. C. where she went for the purpose of demonstrating to the United States Patent Office her latest invention—The Drown All-wave Radio Therapy Instruments.

Doctor Drown was accompanied on the trip by her friend, Mrs. Lois Weber, famous motion picture director, who is interested with Doctor Drown in the organization of the corporation to manufacture and exploit the inventor's instruments.

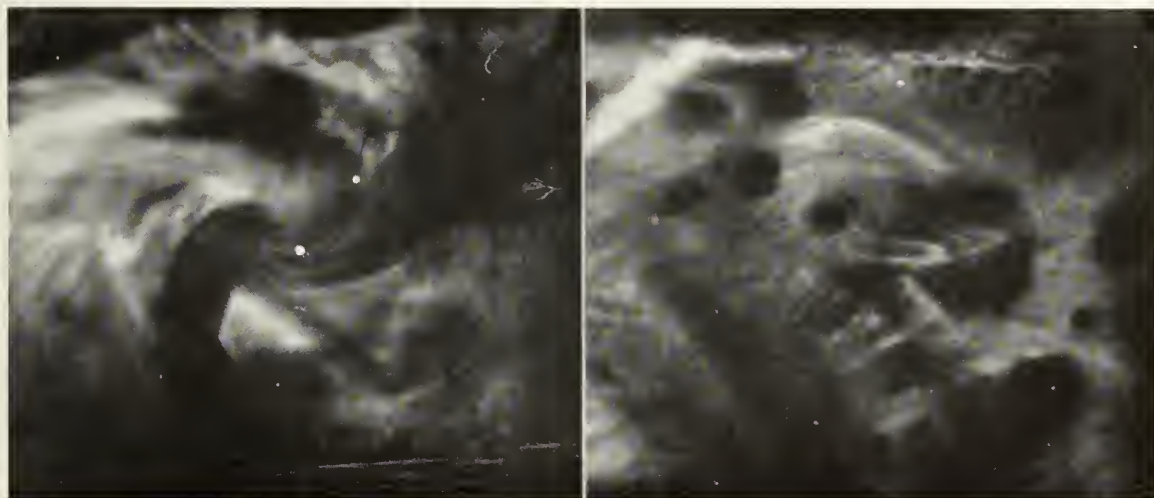
The Drown All-wave Radio Therapy instruments attracted great attention at the National Capital, but International Photographer will let the Associated Press tell the story of the marvelous achievement of a Hollywood woman who can take pictures of the

instrument is far from being fully understood even by Dr. Drown, she concedes.

Essentially it is a compact radio receiving set, sensitive to practically all radio waves, connected to a photo-electric cell, which transforms electrical variations into light variations.

To photograph a muscle in almost any organ, Dr. Drown tunes the receiving set to a frequency, or wave-length, of 30 kilocycles per second. A small wire running from the set is then touched to the skin approximately over the tissue to be photographed and held there for about two minutes. To photograph the skin a frequency of only 10 kilocycles is used while to photograph bones, 70 kilocycles are required.

According to Dr. Drown's theory of the instru-



Left—Pylonic end of stomach and duodenum which has been diseased. This picture was made without light or lens, by vibration only. Right—Picture of human lung, showing portions of bronchial tube and healed and open abscesses in lung.

soft tissues of the interior of the human body with only "unseen light" and without a camera.—Editor's Note.)

Washington, D. C. Post.—A new method of photographing the soft tissues in any part of the body by the touch of a wire to the skin was demonstrated yesterday before officials of the Patent Office by Dr. Ruth B. Drown, of Los Angeles.

Based on the principle that each tissue of the body—such as heart, lungs, nerves, intestines and brain—has its own individual electro-magnetic vibration and that these can be tuned in to record themselves on photographic negatives, the new instrument was declared by Dr. Drown to produce cross-sectional or whole pictures of tissues and organs within a few minutes. No lights are used in making them.

Pictures exhibited by Dr. Drown in support of her application for a patent revealed that the instrument goes beyond the X-ray in making possible photographs of tissues which do not record through the X-ray. She said that the instrument was intended to supplement the X-ray, not to replace it.

Still a Mystery

Mysterious in its action and almost uncanny in the way it reveals the inner secrets of the body, the

ment's action, the natural vibration or frequency of the tissue is picked up in the radio set through the wire, is amplified and passed into the photo-electric cell.

"It is an invisible light which acts upon the photo-electric cell, instead of a beam of visible light which the cell ordinarily receives," she explained. "This invisible light is caught and focused on sensitive photographic film.

"Sometimes, for some unknown reason, tremendous magnifications of the tissue photographed result, and then it is possible to study the living cell structure of it," she said.

"I am a physician, not a physicist, and I cannot explain technically how the instrument works. I do know that it does work and we have used it in the diagnosis of about 100 cases to date, even though it is still in the experimental stage."

The only soft tissues which have thus far resisted the specific probing of the instrument are the veins, which because of the blue color showing through them, fail to record themselves on the film. This failure to record is due to the blue insensitivity of the photo-electric cell used.

*Since this story was written, Dr. Drown has organized as Drown Laboratories, Incorporated, under the laws of California.

CINEMA CARONI

(With Sauce for Those Who Like It)

By ROBERT TOBEY

HOLLYWOOD HONEYMOON
or
The Loves of Lili Liverblossom
by
CHAPTER XXIV (Censored)
CHAPTER XXV (Censored)
CHAPTER XXVI (Censored)

Shucks! Things have come to a pretty pass. It's getting so you can't get a thing past the censors. And the above three chapters of our thrilling serial were some of the juiciest bits, too. But are we daunted? H-e-c-k, no! Your editors are working feverishly to find a way to get around the strangling grasp of the censor octopus. See next month for startling developments. The public must—in fact will—be served!

COOKERY DEPT.

INTO THE FIRE
Joan Blondell and Dick Powell
OUT OF THE FIRE
Binnie Barnes and Samuel Joseph

KNEECAP REVIEWS

(No space left on my thumb-nails)
"GREEN PASTURES." This is so good an offering from the Related Warner boys that I'll stand for three more of their musicals with Busby Berkeley ensembles. Written by Marc Connelly, this picturization of his successful play was also directed by him in collaboration with William Keighly.

Here is a quaint story told with a simple directness and with as complete an absence of affectation as an over-zealous Warner Brothers trick department would allow. Using this negro folk-story as a smoke screen, astute Mr. Connelly with an entertaining naïveté and completely disarming mode of attack, dissects the biblical fables of Genesis.

The portrayal of "De Lared" by negro actor Rex Ingram is of such high caliber that it's sad there's so little motion picture call for his fine talent. From the splendid supporting cast stand out Oscar Polk as the angel Gabriel and Eddie Anderson as Noah.

Photography was in the hands of Hal Mohr. Should I gild the lily?

"STAGE STRUCK," starring recently-spliced-but-they-weren't then Dick Powell and Joan Blondell, and directed by the flighty Mr. Busby Berkeley. Ah, me—I wrote the above review of "Green Pastures" before seeing "Stage Struck," so I guess I'll have to overlook the fact that Dick Powell and Jeanne Madden break into a song and dance skit in the middle of the Natural History Museum. And that the Yacht Club Boys without a yacht club break into rhyme without reason on the back steps accompanied by an arduous radio, and go into Keystone Comedy routines in private offices. It makes me want to turn in my badge.

But don't let this make you stay away from the picture, which is full of laughs. Powell is probably better than ever before and Blondell is up to her usual antics. Film introduces Jeanne Madden, who isn't hard to take. Warren William, Frank McHugh and Hobart Cavanaugh do their stuff well. Byron Haskin was responsible for the first-rate photography.

"YELLOWSTONE," a story of murder in Uncle Sam's playground. Interesting as this is, it falls far short of its splendid possibilities and bogs itself down with the weight of its own complications. The theme has novelty and suspense in abundance, but there are just too many crooks to kill off, requiring quite too much coincidence.

Henry Hunter as the young ranger of the story is a handsome lad and should go far. Judith Barrett, playing the unsuspecting daughter of a bank-robbing father, presents an unconventional type of beauty and gives promise of developing into a unique personality.

Ralph Morgan, as the father, performs with quiet conviction. Others are Andy Devine, Alan Hale and Raymond Hatton. Direction by Arthur Lubin keeps up the rapid pace of the piece. Milton Krasner has photographed well throughout, contributing some unusual scenic shots.

"DRAEGERMAN COURAGE," with Jean Muir, Barton MacLane, Henry O'Neill, and Robert Barratt, and directed by Louis King. The only thing needed to make this complete is the giddy touch of Busby Berkeley. If you are rabidly fond of seeing miners digging frantically underground for hours on end to rescue other miners, then by all means don't miss this earthworm epic.

Jean Muir and Barton MacLane are head and shoulders above the story, which really isn't so bad except for hammy dialogue and too much

digging. Effective photography is by Gilbert Warrenton.

"RHYTHM ON THE RANGE" is excellent film fare. Just what the title implies, this singing cowboy story gives you Bing Crosby crooning to a horse of another color. Besides that if you care for it, you are given just a little too much of the very funny Martha Raye, an introduction to delectable Frances Farmer, and don't bazooka-way and you'll see Bob Burns. Lucille Gleason, Warren Hymer, and George E. Stone are in the thing too and don't deserve such slight mention.

Norman Taurog directed with a hilarious touch, and probably no "western" has had more capable camera treatment than this one in the hands of Karl Struss.

"THE GORGEOUS HUSSY," in which Joan Crawford is gorgeous but very little the hussy and regresses to better looks, better acting, and four leading men.

This patch-work tale of adventure in the Andrew Jackson era is so full of separate and complete episodes as to be capable of rendering it incoherent, yet these are so skillfully blended by story, acting, and the expert direction of Clarence Brown that there is no feeling of periodicity.

The one continuous thread of the tale is the love life of the "Gorgeous Hussy," Joan Crawford in this part gives her best performance in quite too long a time and forsakes at last the highly artificial mouth make-up and abnormal eyelashes that have previously been her trademark. As her first husband, Robert Taylor is as handsome as ever, but is characterless in his acting, possibly due to the restraint of period costumes. Franchot Tone has little opportunity to be other than innocuously pleasing, and James Stewart's role affords scarcely more histrionic play. Melvyn Douglas, however, has a role that he can really set his teeth into, and set them he does, biting himself off by far the juiciest bit of acting in the picture. This far from handsome but strangely compelling actor paints with strong, sure strokes his picture of the inflexible idealist who lets not even his love for the Gorgeous Hussy alter an unswerving course toward the goal of State's Rights.

Lionel Barrymore as Andrew Jackson has a part that is in accord with his capabilities. Beulah Bondi's work as Rachel Jackson is marvelous, and Alison Skipworth is fine in a small role.

Photography by George Folsey creates a perfect setting for this commendable production.

"MY MAN GODFREY," a Gregory La Cava production starring William Powell and Carole Lombard. The apt, amusing, and novel main title is followed by a picture possessed of the same qualities maintained in superlative. You'd be a fool to miss this unless you're sure you have no sense of humor whatsoever. How mad, but how charming, infectious, and relaxing is this gay film cannot be conveyed in the telling. The effervescent Miss Lombard outdoes herself in her portrayal of the beautiful, dumb, and untrammelled Irene Bullock. Mr. William Powell's performance is of the best. Unforgettable is the scene where in rags and tatters and a great growth of beard he saunters in utter superiority through the doors of the Waldorf.

More than excellent characterizations are contributed by Alice Brady, Gail Patrick, Eugene Pallette, Mischa Auer, Jean Dixon and Alan Mowbray.

Directed and produced by Gregory La Cava from the novel by Eric Hatch, and photographed as only Teddy Tetzlaff can do it, the production is an achievement that is a feather in the caps of all concerned.

When "The Devil is a Sissy" is released in England, the title will be altered to "The Devil is a Softy." It seems "sissy" is not a polite word in the Isles.

Them Britishers better not be too snooty. Some of their own little nifties don't stand up any too well here in Uncle Sam's Alphabet Land.

An Englishman is at a pretty serious disadvantage if he comes over here and tries to get colloquial about keeping your courage up.

HOLLYWOODCUTS, by the Shovel Boys (They dish the dirt) * * * Everybody gives parties to celebrate occasions. So Glenda Farrell had a party to celebrate the occasion. Except perhaps the institution of Saturday night parties. And quite a cortege of Glenda's boy friends were there—Drew Ebersson, her current heart-throb;

Addison Randall; and Dr. Herbert Gaillard. * * * Mary Brian attended unattended by Cary Grant. * * * Lorena Layson was there with supersoap magnate Danny Danker (of whom this is the missis). * * * Hugh Herbert was there with the hiccups, but Herb Gaillard soon cured that—not until after Hugh had tried seventeen home-prescribed remedies ranging from holding the breath until exhausted to standing on the head and drinking a glass of water. * * * Harriet Parsons was there—and so were Barton MacLane, Eddie Adams, Howard Lang, Mecca Graham—and, of course, Glenda Farrell!

Looks as if Southern Californians will soon have a way to burn their money all year round. With two new race tracks besides Santa Anita in project, plans are already arranged to stagger the racing seasons so that the ponies will never quit going round and round so the money can go in there. Just a few weeks ago, the cornerstone was laid for the new track at Del Mar, twenty miles north of San Diego. Bing Crosby, who owns a nearby Rancho and is a big investor in the track, was on hand to see that there was nothing crooked about the way the c. s. was put in. John Galloway and Elizabeth Russell were also on hand to see Governor Merriam dedicate the spot. * * * Miss Russell, who is a sister of Rosalind Russell's, is breaking into pictures via Paramount. * * * Best bet of the month—Janice Jarratt, New York "magazine-cover" girl, just signed and brought out to the Gilt Coast by Universal. The girl has beauty, charm, grace, intelligence—and what is most important, complete lack of camera-consciousness. * * * Frank Shields talked Errol Flynn into entering the Pacific Southwest Tennis Tournament. So Errol entered with Elmer Griffin as partner—and the two drew as first opponents, Shields paired with Fred Perry, champion of the world! * * * Little Jane Withers was made Honorary Chief Stewardess of the American Airlines at the recent christening of the new flagship "California," first of a fleet of transcontinental sleeper planes. Marjorie Gage flew in to see the christening in her own little red monoplane—which can nestle under one wing of the giant twin-motored Douglas. * * * Arline Judge at a recent party invited practically everyone there to ride home in her new limousine, she was that proud of it. She'd have been embarrassed if they had all accepted, for it isn't THAT big. * * * Maybe the industry is missing a bet in not making more serials. When a group of stars visited Olvera Street recently, the one the kids all recognized first and mobbed for autographs was nevertheless probably the least famous of the group—Jean Rogers, the "Dale Arden" of Universal's "Flash Gordon" series. * * * The fifty school girls who were standing the other day on the corner of Hollywood Boulevard and Highland Avenue would be terribly chagrined to know that Clark Gable, wearing a beret and an old leather jacket, passed within a few feet of them and wasn't recognized. Or were they all blase?

This year the annual motion pictures Fathers-and-Sons Convention was held on director Al Green's ranch in Puente. * * * Each year, you know, the boys treat their dads to a picnic and as much gentle ribbing as possible. * * * Of course, Sol Lesser and his son Bud were on hand, since Bud is the chief instigator of the affair. * * * Charlie Irwin was master of ceremonies. * * * Little Bobby Breen brought both of his dads—his radio pop, Eddie Cantor, and his real father, Hyman Breen. * * * The three Ritz brothers had trouble getting in, as they only brought one dad among them. * * * He's screwy too. * * * Chic Sale turned Lincoln's "Gettysburg Address" into a political speech. * * * Groucho Marx had to leave early because his son was playing in a tennis tournament. * * * After eats and spiels, there was such a baseball game as you've never seen.

A novelty of last month was a gay "Nickelodeon Party" at which were revived the dear dead days when the nickel was king. * * * Pat O'Brien arrived in a horse-drawn hansom that had the very latest self-opening doors. * * * And a surrey drove up and out jumped Pat Ellis, Paula Stone and Wayne Morris. * * * Among others arriving in old-fashioned garb were Jeannette MacDonald and Gene Raymond—Jeannette in her costume from "San Francisco"—Eleanor Whitney with Tom Brown and Henry Willson, Glenda Farrell charming décolleté, Fred Stone, Mr. and Mrs. Walter Brooks III (Jacqueline Wells), Mr. and Mrs. Donald Woods, Marjorie Gatenon, Evangeline Russell, Commodore J. Stuart Blackton, John Bryan, and Inez Courtney. * * * Helen Ferguson masqueraded as a Salvation Army lass and picked up a penny here and there. * * * After the nickels had been collected, sequences from several old-time celluloid thrillers were run by Commodore Blackton, and then a Fred Stone vehicle of 1918, called "Johnny Get Your Gun," in which Fred did every stunt in the catalogue, was run amid the cheers and cat-calls of his friends.

Hi, siser! Wanta get into pictures?

If you are an artist, an architect or a cinematographer, don't fail to read Lewis W. Physioc's article on PERSPECTIVE, page 16, this issue.



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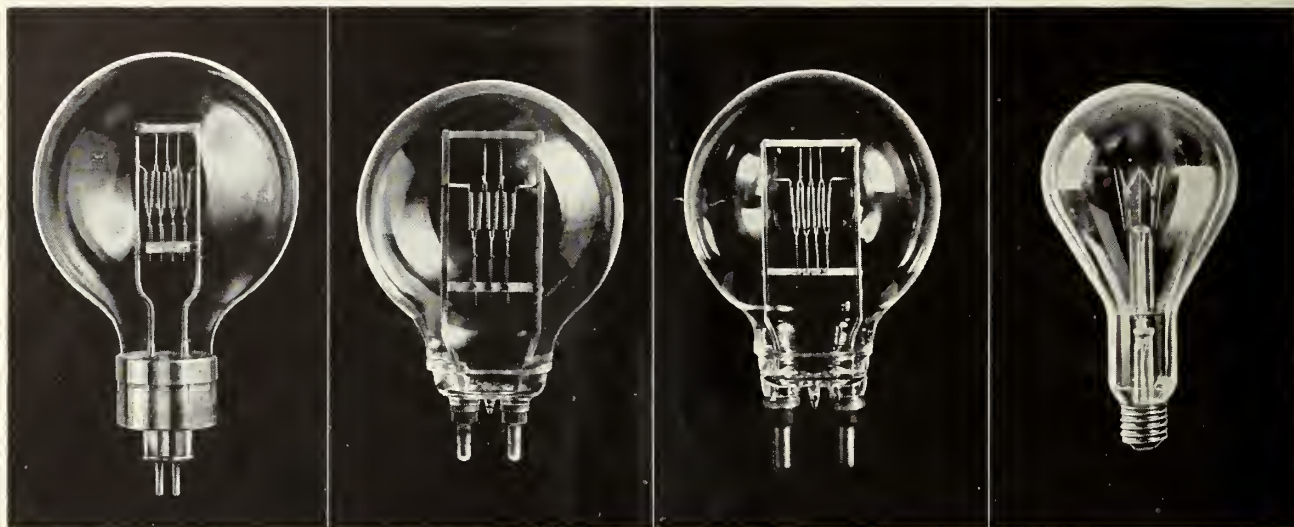
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D. *Hence these lamps reduce the number of retakes and interruptions of the production schedule*. Obviously, this promotes better morale on the part of actors, directors, technicians, and other personnel . . . which is reflected in better pictures.

3. Lower production costs on pictures . . .

A. *These new lamps are readily used in equipment you have*. This means no investment to make in new equipment, except for inexpensive filters; no new rentals to pay.

B. *There is no mechanism to maintain*.

C. *With these lamps fewer men are needed to handle lighting equipment*.

D. *Less time is necessary for rigging or striking a set* because the equipment is light in weight, compact and easily moved.

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INTERNATIONAL PHOTOGRAPHER

HOLLYWOOD

TH YEAR

NOVEMBER, 1936

VOL. 8
NO. 10



WILFRID CLINE

CENTS
A COPY

A Thanksgiving eve on the broad waters of the Pacific, between Honolulu and Tokyo, Japan. Note the horizon-wide sun-path on sky and sea and the deep shadows on the deck of the Japanese ship. A shot by Wilfrid Cline of Local 659, I.A.T.S.E. and M.P.M.O. Mr. Cline is now associated with Technicolor.

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Edward H. Kemp, of San Francisco, is the artist responsible for this remarkable photograph. The shot is a view of Hermit Peak, in the Grand Canyon of the Colorado, or of Arizona, as the viewer may like. Get some idea of the vastness of the canyon by the contrast of the Peak and the Canyon walls with the people in the left foreground and with the village or camp at the foot of the peak.

INTERNATIONAL PHOTOGRAPHER

MOTION PICTURE ARTS AND CRAFTS

VOL. 8

HOLLYWOOD, NOVEMBER, 1936

No. 10

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Its Branches; Professional and Amateur; Photography; Laboratory and Processing,
Film Editing, Sound Recording, Projection, Pictorialists.

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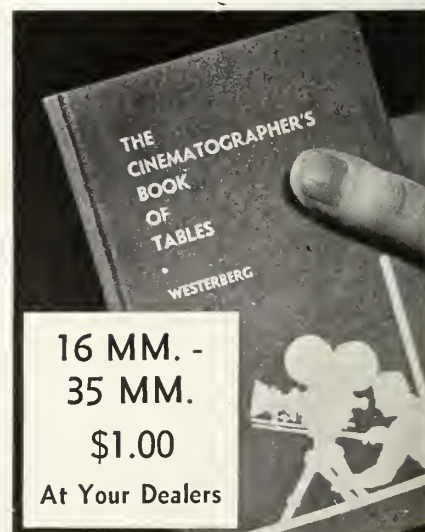
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PERSPECTIVE THE NEW SYSTEM

By LEWIS W. PHYSIOC

[The student should be impressed with the fact that the series of studies in Perspective mean nothing as mere reading matter. They cannot be thoroughly understood without the drawing board, upon which the figures should be reproduced, point by point, as described in the text.—Author's Note.]



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A "CHARLIE CHAN AT THE OPERA"—Fourteenth in the series depicting the adventures of Earl Derr Bigger's famous fictional detective, gets under way with the first scene appropriately a close-up of Warner Oland as Mr. Chan. Beneath the camera can be seen H. Bruce Humberstone, director and to the left Cameraman Lucien Andriot. Eddie Fitzgerald is second cameraman and Eddie Collins, assistant. The camera, new even to Hollywood, weighs one-third of the present day equipment. Standing next to Oland is actor William Damarest. Boris Karloff is Warner Oland's chief menace in the new film.

The Debie Parvo Arrives in Hollywood

When this latest type Debie camera was put on the set, at Fox Studios, the director asked the operative cameraman: "What is that you have there?"

The cameraman replied: "Why, that's a radio."

"Get it off here. We don't want any radios on the set."

The operator then explained that it was a new camera and the director asked where the finder was. The cameraman replied: "Oh, you could throw the finder away and still shoot the picture, as you can look right through the film."

The finder was taken off and the picture shot without it.



PERSPECTIVE

By LEWIS W. PHYSIOC

(Continued from October 1936)

THE work of the scenic artist, sketch artist and draughtsman, in the motion pictures, represents a great variety of subject matter. We cannot be surprised, then, if as many difficult problems present themselves.

It must be mentioned, also, that the scale, compared even to painting for the stage, is sometimes gigantic—huge drops and backings, cycloramas and miniatures that entirely occupy one of the large studio stages.

A single artist, working on a sketch of such dimensions as 15x30 inches, may imagine the difficulties of the scenic director supervising the painting of one of those "big jobs." First, there is that enormous spread of canvas a couple of hundreds of feet long and fifty feet high. Next, there are many artists, each with his individual temperament, ideas and technique; yet the completed job must "hang together" (in the parlance of the scenic artist) and appear as the work of a single man.

Likewise, the artist working on an easel job, with his vanishing points at least somewhere within the confines of the room in which he is working, may imagine some of the perspective problems of one of those great spreads of canvas.

The masters of perspective, probably knowing nothing of these specific problems of the modern movie studios, have not yet come to the aid of the scenic artist. He must, therefore, formulate for himself the solution of these problems.

Before proceeding with a study of some of these difficulties, we should compare the new system shown in Plates 1, 2 and 3 with the older, long accepted rules of perspective.

The student, no doubt, may ask the question: This new system appears to be okay, but how do I know but what it's some "phoney idea" that will not check up mathematically?

We know that the average artistic mind has an aversion for anything mathematical. He need have little worry about this, for the writer, himself is a poor mathematician, and is unable to present or expound any complicated problems in geometry or trigonometry.

But there is a beautiful agreement between the rules of perspective and mathematics that easily may be perceived and pointed out. We attempt to show this in Plate 4.

Figure 1. (Plate 4) represents the principles long practiced. The horizon (between the two vanishing points) represents the hypotenuse of a right-angle triangle, the dimensions of which are governed by the axis, i. e., the distance between the eye of the observer and the object to be rendered. The angles A-A', B-B', and the distances between the vanishing points and the intersection of the axis with the horizon depend upon the inclination of the ground plan of the building (or other object). Therefore, lines drawn from the eye to the vanishing points

are parallel to the plan of the sides of the building. And further, any variation in the inclination of the plan of the building relatively changes the angles of the triangle; and also relatively varies the distances between the vanishing points and the intersection of the axis at the horizon. As angles A A', B B' are equal, so will these areas be of equal angles in any change in inclination of the plan.

It will be seen that the Measuring Points (MP) are secured by describing arcs from the point of sight (eye) with the vanishing points completing the radii. The vanishing point for all diagonal lines is formed by equally dividing the entire triangle within the area of the eye and the two vanishing points. The Measuring Points will be described at the proper time.

Figure 2. Merely is an additional illustration of the fact that the entire perspective scheme is based on the classic Forty-seventh Problem of Euclid. Therefore, we may deduce the simple rule that:

First: The perspective layout is an inverted right-angle triangle.

Second: The axis represents the altitude of this inverted triangle, and is perpendicular to the horizon, or base: the length of the axis determines the dimensions.

Third: As the square of the hypotenuse is equal to the sum of the squares of the other sides, so may the other combinations be calculated, thus:

$$(A A')^2 = (A B)^2 + (B A')^2$$

$$(B A')^2 = (C A')^2 + (C B)^2$$

$$(A B)^2 = (A C)^2 + (B C)^2: \text{and so on.}$$

The practical application may be found in the following proposition:

Suppose the confines of the proposed drop (or sketch) enables the artist to establish one of the vanishing points at A', distant from C, for example, 12 feet (or 12 inches). These two known points together with B, i. e., the known distance of the eye (or camera) form the 30° angle BCA', which being subtracted from the full 90° angle leave the angle of 60° BC'A. Therefore:

$$\begin{aligned} CA' : BCA' :: ? : BCA \\ 12 \text{ feet is to } 30 \text{ as } ? \text{ is to } 60: \text{or} \\ 12 \times 60 \\ \hline 30 = 24 \text{ feet (or inches)} = \end{aligned}$$

the second vanishing point to be found.

Now, let us try and prove that the new system will conform to these principles.

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Without accepting the layout as shown in Figure 3, the student may, himself prove it. Reconstruct the layout as given in Plate 1 (October issue International Photographer), and follow the directions set forth in Figure 3 (Plate 4).

Extend the lines A B, A C, D E, and D F, to the horizon, thus establishing indisputable vanishing points. Connect these two VPs with the point representing the position of the eye. It will be seen that these lines form the right-angle triangle, and that these lines are parallel with their respective lines of the ground plan, agreeing with the findings of the older system, as shown in Figures 1 and 2. And further, that the vanishing lines of the per-

spective sketch must be correct in order to produce the perfect right-angle triangle.

We will now check the farther corner. Having obtained the perspective scale of 4 feet, at points D and 17, and knowing from the plan that the building is 20 feet long, extend a horizontal line from D and tick off 5 times 4 feet = 20 feet. Extend a line from this 20' 0" point to MP (right) and where this line intersects line VP (left) and D, proves the perspective position of the far corner. Prove fur-

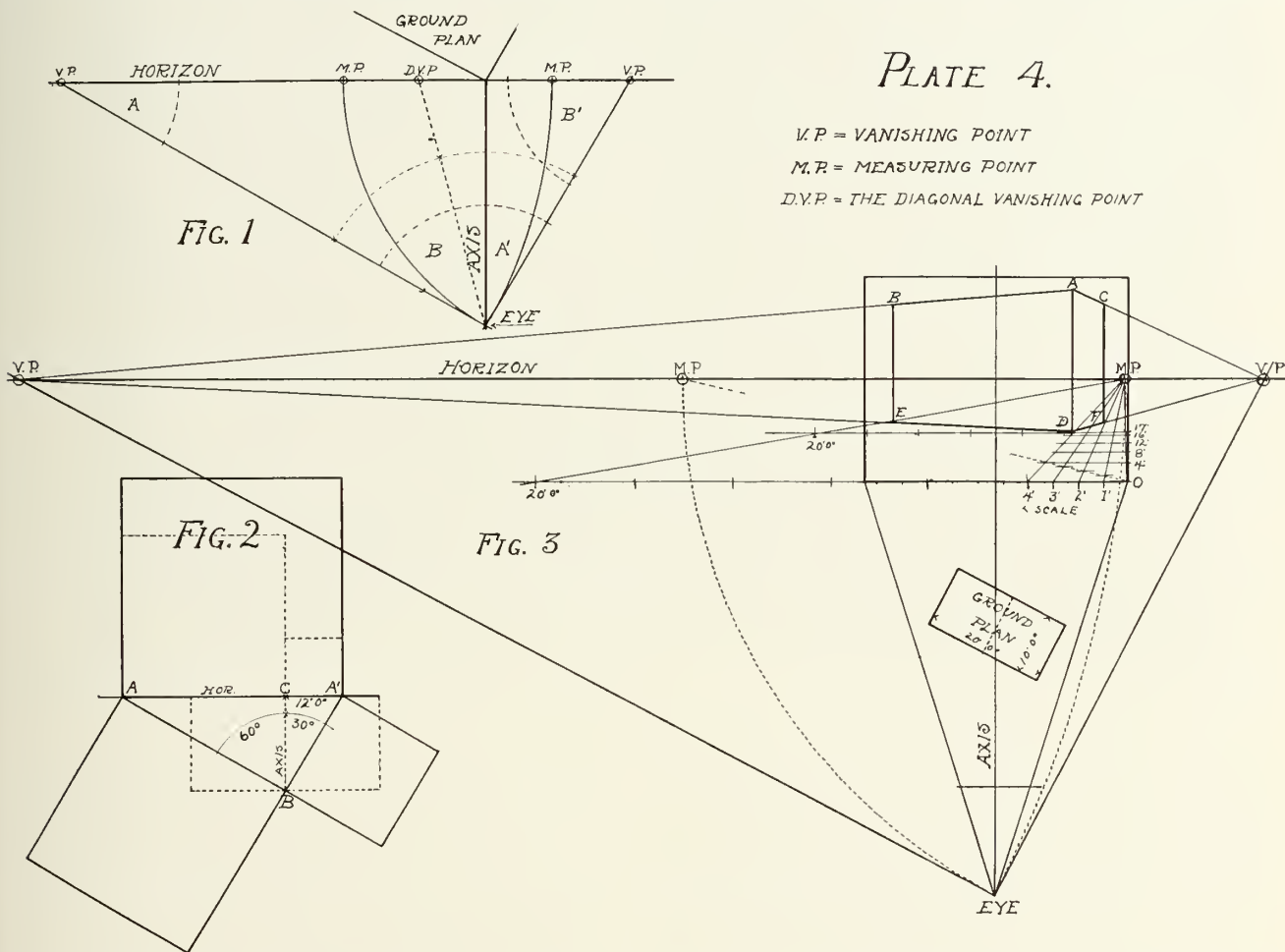


PLATE 4.

V.P. = VANISHING POINT

M.P. = MEASURING POINT

D.V.P. = THE DIAGONAL VANISHING POINT

spective sketch must be correct in order to produce the perfect right-angle triangle.

Now, let us see how the perspective scale and all the measurements check up.

Find the measuring points, as shown in Figure 1.

We have shown in Plate 1, that the horizon is four feet above the base line of the sketch (or above the groundline); and that the base-line of the sketch is 10 feet and one-half (or reduced to a scale of inches: 1 foot $\frac{1}{2}$ inch).

Four of these units are ticked off in the lower left-hand corner of the sketch, as a measuring scale. Extend these points to the MP (at the right). These lines diminish the scale in proper perspective.

Extend a line from O (lower right corner) to the MP (left) on the horizon. Where this line intersects the line 4 of the perspective scale gives the perspective diminishing of four feet receding into the distance. The other points, 8, 12, 16, are similarly found by connecting 4 (on the side of the sketch) with same MP, and so on, with 8 and 16.

Now, by measuring with the scale rule (in this instance, 1 foot = $\frac{1}{2}$ inch) we find the distance from

ther by extending the base-line of the sketch, using the scale of that plane, 1, 2, 3, 4 (beginning at 4), and so on to 20' 0". It will be observed that the line running from MP (right) through E properly intersects the 20 foot point of both the near and far scale.

We are now justified in comparing the two systems, as to simplicity as well as accuracy.

We have seen that the older system requires a large area on the average drawing board to execute even a small sketch. And, further, that the matter of scale and measurement require considerable study, application and practice to master the subject. And that all these features are greatly complicated when applied to some of the enormous layouts imposed on the motion picture artists.

In the new system, we are shown that very little mathematics is employed, other than the use of the scale rule and the dividers.

However, the application to large scale work is still embarrassing but, in succeeding installments, we will endeavor to show some short cuts and simple devices.



Applause For the News Lens Men

By KARL A. BARLEBEN, JR., F.R.P.S.

Dean New York Institute of Photography

NEWSPAPER camera reporting is one of the most difficult rackets, yet thousands of budding camera toters seek positions with the papers. It would appear that there is no dearth of talent in this tough and thankless work. We should, however, take off our hats to the boys who present the news to us daily in picture form. Did you ever give them a thought as you glanced at their work?

Whatever news cameramen may be, you have to give them credit for carrying on under adverse circumstances. Not many average people could cope with their daily problems and come out on top as a regular thing. It must be remembered that when the editor gives an assignment, regardless of how difficult, or even impossible, it may be, he expects—and gets—results.

It is the unwritten code in news offices that the cameraman must come back with something on his plates—or else! Rain or shine, winter or summer, night or day—it is all the same to the lens man. He must get his pictures in spite of all. This would be bad enough occasionally, but he is faced with the problem daily.

The average newspaper cameraman must of necessity be made of stern stuff. He must be able to fight his way to good pictures, for it is not often that the path is made easy for him. Sometimes he has everybody against him. The stories that could be told would make fascinating reading. Some can be found in Price's "News Photography" and Kinkaid's "Press Photography" is equally illuminating. The life in general hardens the boys so that in time they are not exactly lilies, nor even gentlemen. But with a little understanding of their work, their gruffness is easily excused. Some of the old-timers are holymen, but the more recent crop is generally better.

Most of the youngsters hail from college, and as time goes on, many predict that the future news photographer will be not only well educated and polished, but expert at camera-handling, too. Most lens hounds of today couldn't take any prizes at photographic exhibits, and for this reason the public may regard them with lifted eyebrow. Yet when it comes to getting honest-to-goodness news pictures they have no peer.

After all, no one man can successfully qualify for several different types of photography. Why expect the news man to be proficient in pictorialism when the pictorialist cannot even attempt picture news reporting? In their line, the news boys are good, as a general thing, and are serious in the ambition to turn out better material as they go along. Their trouble is chiefly that their routine work on the papers doesn't permit much time to dabble and experiment with the so-called higher aspects of pho-

tography as can the well-known amateurs and professionals.

Stanley Walker, in his book, "City Editor," gives a grand chapter to the news cameramen. He explains the past and present status and predicts what we may expect in the future. It's good reading for those interested.

During the past five years much has been said about news cameras being made smaller and more compact. That we may eventually see such a change may well be, but the fact remains that the boys still stick to their 4x5 outfits in spite of what may be said about smaller and miniature cameras to the contrary. They had a splendid chance to go to smaller sizes not so long ago when the Folmer Graflex Corporation offered the 3¼x4¼ Speed Graphic on the market. Here was a job identical with the 4x5 outfits they had been using for years, but smaller in size.

Did the boys go for it? Very few. Today the vast majority cling to their 4x5s. The 3¼x4¼ Speed Graphic, however, seems to have been adopted by amateurs as an ideal all-around camera. Experiments have been made with the idea of installing miniature cameras in the offices of progressive newspapers, and while today these cameras are used occasionally, there is no denying that the vast majority of news photos are the products of 4x5 Speed Graphics and Graflexes. About all they use miniature cameras for is candid photography, in which field, of course, it stands supreme.

It must be recognized that in order to change the existence of things as they now stand, the entire darkrooms and working procedures would have to be altered to accommodate the new size chosen. This would involve an investment of more than the officials feel justified in considering, hence the matter stands at the moment as it is. Free-lance photographers are at liberty to use any kind and size of camera they see fit, because they are not bound by the routine the staff men must adhere to.

Staff news cameramen sometimes own their own equipment, and sometimes they use that owned by the newspaper. Most of the boys prefer using their own cameras, it seems, for then they have greater confidence in their work. Special cameras, such as the "magic eye," are used for sports events, and are, of course, owned by the papers. The magic eye is a new type of camera, not unlike a motion picture camera. It is capable of making a series of exposures in rapid succession, thus making it possible for the editor to select choice negatives of swift action and the like.

Also for sports work are the "big Berthas," usually 5x7 Graflex cameras fitted with enormous telephoto lenses, sometimes of considerable speed. These are used at fights, games and races, for like as not the press box is so far away from the scene of action that it requires "heavy telephotoing" to get reasonably sized images on the negatives. Some of these big Berthas cost in excess of a thousand dollars.

Syndicates function much like newspapers, except that their coverage is usually world-wide. Their representatives are located in key cities all over the world. Syndicates feed the press with news and photos which the local newspapers are unable to

for not more than five, place the wet negative in the enlarger and make a perfectly satisfactory 8x10 or 11x14 print in short order is quite a revelation. However, the negatives, unless given special after treatment, such as more complete fixing and wash-



Richard Statile, formerly of Associated Press and now with Keystone Press Agency.

Press photographers covering a Hollywood event.—Courtesy S. Mendelsohn.

get themselves. In turn, syndicates use considerable newspaper material from different localities. Newspapers subscribe to syndicate services, paying so much for the use of whatever news items and photos they use.

One of the most recent and important advances in news picture gathering is the transmitting of photographs by "wirephoto" from one country to another, thousands of miles away, in the space of a few minutes. This has keyed up the entire newspaper field, no end, and it is indeed a slow sheet that does not present the foreign news in pictures the same day it occurred. Scoops still exist, however, locally, and it is still a race to see which paper comes out with the news or pictures first.

It is not uncommon for a photographer to make an exposure at two in the afternoon and present a print to the editor an hour later. Fast working developers, hypo solutions and short water rinses make this possible. To be able to develop a negative in two

or three minutes, fix is about the same time, washing, deteriorate quickly. After the picture has appeared in the paper it is of no special value anyway, so no care is taken to keep the negative in good condition. Sometimes negatives or prints will be kept for the "morgue," in which event a little more care is taken in their handling.

In some offices the cameraman carries his own work through the darkroom, but more often he merely turns over his plate holders and goes out after new assignments, leaving the darkroom crew to carry on where he left off. In any case, the work is hard, swift and in most cases thankless.

During the past few years the candid cameraman has come upon the scene. At one time he came close to putting the regular staff man out of business with his little camera. But today the attitude seems to be to use the best offered by both staff and candid men. While average staff news men are rarely known, candid cameramen seem to have been lifted up and presented to the public on a platter. No question but that they are worthy of it, but it does seem strange that men who have been gathering news pictures for years should be unknown, while a youngster with a small camera steps in and becomes nothing short of famous in a short while. It is probably the spectacular work that has brought the candid man fame. Amateur photography, too, has publicized the candid photographers through the close connection between them and amateurs in that they use the same kind of cameras.

(Turn to Page 25)



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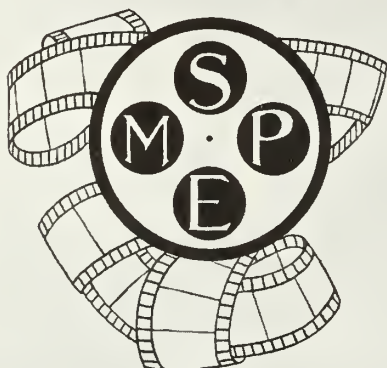
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SOCIETY OF MOTION PICTURE ENGINEERS



FALL CONVENTION 1936

The Society of Motion Picture Engineers, at the first session of its fall meeting in Rochester, October 12, announced the election of S. K. Wolf as president of the society. Mr. Wolf succeeds Homer G. Tasker, who held the office for the past two consecutive years. Mr. Wolf is elected for a two year term.

Mr. Wolf was graduated from the Louisiana State University in 1922; Sheffield Scientific School, Yale University in 1926, employed by the Westinghouse Electric and Manufacturing Company during the years of 1922 and 1923; served on the faculty of the Sheffield Scientific School, Yale University, 1923 to 1928.

He entered Electrical Research Products, Inc., as installation engineer in 1928; became acoustic engineer in 1929 and later became manager of the acoustic consulting department, serving in that capacity until January 1, 1936.

In 1932 Mr. Wolf was selected to represent American acoustical engineers at the International Electrical Congress in Paris. Again in 1936 Mr. Wolf was sent to Budapest as representative of the Society of Motion Picture Engineers and the American Standards at the International Standards Association Meeting held in that city. He is now a member of the Board of Edison Foundation.

Mr. Wolf is at present connected with Erpi Picture Consultants, subsidiary of Electrical Research Products, and is engaged in the production, distribution of instructional sound films produced by this organization.

* * *

S.M.P.E. AWARD OF ANNUAL PROGRESS MEDAL TO DR. C. E. K. MEES AND JOURNAL AWARD TO E. W. KELLOGG OF R. C. A.

At Rochester, N. Y., on October 14, the "progress medal," by which the Society of Motion Picture Engineers recognizes work resulting "in a significant advance in the development of motion picture technology," was presented to Dr. C. E. Kenneth Mees, vice-president of the Eastman Kodak Company, in charge of research and development. The occasion was the society's semi-annual banquet, at the Oak Hill Country Club.

At the same time, Edward W. Kellogg, of the RCA Manufacturing Company, received the "Journal award" for the best technical paper published in the society's journal in 1935. The paper for which he won the certificate was entitled: "A Comparison of Variable Density and Variable Width Systems."

The progress medal was presented to Dr. Mees, not for any single development, but in recognition of his contributions to motion picture technology over a period of 35 years. During that time, Dr. Mees has been actively engaged in research and the direction of research work in photography.

* * *

Dr. Mees commenced his study of photography only a few years after the classical researches of F. Hurter and V. C. Driffeld had laid the foundation for quantitative methods of investigation of the theory of photography. During the period of more than one-third of a century since then, Dr. Mees has published more than 80 scientific papers dealing with many aspects of the science of photography.

Perhaps his most outstanding researches have been concerned with the preparation and specification of light-filters and of safe-lights for darkroom use, the preparation of various types of panchromatic emulsions, the measurement of the "resolving power" of photographic plates, and studies on the chemical properties of developers.

Besides his technical papers, Dr. Mees is the author of six books and has edited six monographs on the theory of photography. A monthly bulletin abstracting published photographic information was begun under his guidance and has been continued for 21 years under his supervision.

Dr. Mees received the Bachelor of Science degree from University College, London, in 1903, his thesis dealing with photographic sensitometry. In 1906, he was granted the Doctor of Science in chemistry by the same university. The thesis for this degree, published in collaboration with Dr. Samuel E. Sheppard, who is assistant director of the Kodak Research Laboratories, was entitled "Investigations on the Theory of the Photographic Process." Dr. Mees was given the honorary Doctor of Science degree by the University of Rochester in 1921.

He joined the firm of Wratten & Wainwright, dry-plate manufacturers, at Croydon, England, in 1906, as joint managing director. While he was there he initiated research in light-filters and made possible the commercial introduction of a group of light-filters that has since grown to a list of more than 100, which are recognized as standard for photographic work throughout the world. In 1906 he introduced the well known Wratten Panchromatic Plates.

In 1912 Dr. Mees was engaged by George Eastman to join the Eastman Kodak Company and to organize a research laboratory in Rochester for the study of photographic problems. Since that date, Dr. Mees and his colleagues have published more than 600 scientific and technical papers dealing with most of the aspects of theoretical and practical photography.

Two great branches, especially, of photographic theory have been investigated extensively: (1) the theory of emulsion-making and the nature of sensitivity of photographic materials; and (2) the theory of photographic tone-reproduction.

Another group of important researches begun by Dr. Mees in 1909, and carried on to a successful conclusion since in the Kodak Research Laboratories, is that on the structure of the photographic image, involving sharpness, resolving power, distortion, and

use of the image as a measuring medium in astronomy and spectroscopy.

Besides these contributions to the theoretical side of photography, Dr. Mees has directed and encouraged extensive research in the development of numerous commercial applications of photography.

Notable among these developments was the introduction in 1923 of a process and equipment for amateur motion-picture photography, known as the

paration of new sensitizing dyes, the chemistry of photographic solutions, recovery of silver from waste solutions, duplication of motion-picture negatives, and general research on photographic emulsions and film base.

* * *

Shortly after our nation's entry into the World War, Mr. Kellogg forsook academic pursuits after



S. K. Way



E. W. Kellogg



Dr. C. E. K. Mees

16-millimeter Cine-Kodak reversal process. This process has had a world-wide commercial application.

Since the year 1913, he has had members of his staff devoting their energies to developing and perfecting a color motion-picture process. One method, a two-color subtractive process, introduced about 1915, was used on an experimental scale for more than 10 years. A three-color additive process, Kodachrome, based on several French patents, was developed and adapted for amateur use in 1928.

In 1935, a new three-color subtractive process of amateur cinematography, known as the Kodachrome process, was introduced.

Other fields of development which have been stimulated by his interest and direction are the pre-

several years of teaching electrical engineering and joined the Research Laboratory of the General Electric Company, of Schenectady, to assist in submarine-detection work. Thus, the exigencies of war resulted in the beginning of a career of industrial research and engineering notable not only for importance of accomplishments—most of them directly or indirectly related to the sound-motion-picture art—but also for versatility.

Radio broadcasting advanced with the marketing in 1925 of an all a-c operated receiver incorporating a dynamic-cone loudspeaker and an amplifier with adequate power to drive it, as a result of the fundamental researches of Mr. Kellogg and his associate, C. W. Rice.

New York Institute of Photography Starts Winter Lecture Schedule

The winter lecture-demonstration schedule at the New York Institute of Photography, 10 West 33rd Street, New York City, will be inaugurated on Thursday evening, October 29th, in the studios of the Institute, when Morris Schwartz of the Kalart Company gives a practical demonstration and lecture on the subject of synchro-sunlight and general Photoflash photography.

The use of Photoflash outfits for daylight pictures is becoming increasingly popular for many types of outdoor photography, and in its aim to keep its students advised on the latest photographic developments, the New York Institute of Photography has arranged this special lecture. Mr. Schwartz is a recognized expert in Photoflash and speed gun practice, hence the students hearing this talk will secure first hand knowledge of this new method of photography.

Students at the New York Institute of Photography

are thus assured of up-to-date and practical information, for not only are the latest methods taught in the regular classes, but special lecturers are secured to impart their specialty to the students on certain evenings during the winter months. By this practice, which has been in existence at the Institute for a number of years, the students are given a broad fund of photographic knowledge. Impartially, their information comes to them from various sources and thus enables them to better adapt themselves to the field of photography in which they wish to specialize.

Other demonstration-lectures, scheduled for early dates, include those of Pat Terry, chief photographer for News Week magazine, and Harold Dumont of the Defender Photo Supply Co. For full particulars about any of the New York Institute courses, write to the New York Institute of Photography, 10 West 33rd Street, New York City.

INTRODUCING DUNNINGCOLOR

By RAY FERNSTROM

MOST of the people who talk optimistically about the "trend toward color" overlook one very important fact. That is that so far color production has been concentrated at the extreme ends of the production scale: short-subjects—cartoons, travelogues and novelties—at one end, and a handful of "super-special" features at the other end. In between these extremes lies the bulk of production—program features, Westerns, independent productions, "quickies" and the growing class of commercial and industrial films. Almost without exception, these have been made in black-and-white; until they begin to turn colorward, all this talk about "trends toward color" is wasted breath.

There's a reason for this condition. The short-subjects have to have color; the super-productions can afford to use intricate and expensive color-processes. But the vast field of in-between releases haven't been able to find color they could use to commercial advantage: In general, really good color meant expense; economical color meant cheap, inferior results.

I have just finished photographing two productions in a color process aimed squarely to fill this need. The process is "Dunningcolor," and it is the creation of Carroll and Dodge Dunning. It gives remarkably good results. It is easy to photograph. It can be worked successfully under the hurried conditions of program and independent production. And it does not force the producer to gamble a six-figure sum for the luxury of color. In other words, it is practical, not only as a matter of photographic technique, but as a commercial proposition.

In order to assure the greatest possible simplicity, the Dunningcolor process is at present a two-color method. But it has refined considerably beyond the general conception of a two-color process. The outstanding faults of most two-color systems have been eliminated, and the tonal range has been extended until it very closely approaches three-color results.

The Dunning color process is emphatically **not** a bi-pack process, nor does it depend on such optical abominations as reduced-size images on a single film, multiple lenses, and the like. These ideas may have their individual good points, but they also have disadvantages that cannot be overlooked. In a conventional bi-pack, for instance, the back-negative image (the blue printer, which keys definition) is almost invariably slightly out of focus. Consequently, the resulting color-print is out of focus, or, to put it more correctly, lacks definition. At the same time, since two different emulsions are used, there is a considerable differential in contrast between the two negatives; no matter how the printings are juggled, this remains, and the result is that the resulting print loses in the neutral tones. In reduced-frame methods, this, at least, is corrected, but the problems of register, printing, and the like are disproportionately increased. The multiple-lens systems naturally run afoul of parallax, fringe and printing troubles.

The Dunningcolor negatives are made in a specially-built Dunning camera, on two separate films, both standard Eastman Super-X Panchromatic. These films run side by side through a twin movement, and receive absolutely normal, full-frame-sized images. The lens is a standard type—a modified

Bausch & Lomb Raytar—fitted with a special "Multi-chrome" optical unit devised by Hartley Harrison which divides the lens image in two, and filters each appropriately. At present, the lenses fitted include the standard 50mm, 75mm and 35mm lengths: The 35mm is a genuine 35, rather than a longer focal length fitted with a supplementary glass to widen the angle without supplying such other important characteristics of a true 35 as depth of field, etc. Since ample room exists between the lens-turret and aperture of the Dunning camera, it is probable that ultimately even a normal 24mm lens will be available—the first time such an objective has been available in a color camera.

The camera itself is essentially similar to a silenced Bell & Howell movement, except that there are two films passing through two apertures placed side by side, and driven from a common shaft. The sprockets, pilot-pins, shuttles, etc., are naturally in duplicate.

The magazine is of the standard type, but double width, to accommodate two 1,000-foot rolls of negative film side by side. The twin take-up is driven through a simple automatic clutch which allows each film to be taken up independently.

Focusing is done in the usual manner, by means of a throw-over movement, a ground glass and a magnifying optical system.

One of the most unique features of the camera is the color-control system which is built in. It allows the cameraman to balance up his filters—and consequently his color-condition—for every shot. Looking through the focusing finder, the image is seen reproduced exactly as the filters and printing will recreate it. If the filter-balance is not right for the scene or the light, a simple twist of the filter-control dial will re-balance the system. For instance, suppose it is late in the day, and the light is growing pretty red. This can be seen on the ground glass: A simple twist of the dial, and the image cools down to normal—the whites change from yellow to white. Shooting the scene with this setting, the negatives and the final print capture exactly the effect seen in the finder. The same control can also be of value in overcorrecting for any desired color-effect, such as night-effects and the like.

This control makes it easy to balance the camera for any type of lighting—sunlight, arcs or incandescents. On interiors, a cameraman can use incandescents his normal lighting balance, but it is naturally necessary to increase the intensity of the light enough to offset the absorption of the filters and the beam-splitting optical system. Theoretically, this increase should be considerable; actually I have found

(Turn to Page 28)

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Motion Picture Sound Recording

Chapter XXVIII

ONE of the great bugaboos of motion picture sound recording in the early days was the presence of "ground noise," or "background noise," and the difficulty of maintaining this noise at so low a level that it would not interfere with the reproduced sound to an extent great enough to reduce the intelligibility of recorded dialogue and the quality of music.

Background Noise

This appellation "ground noise" was given by sound engineers to the sputtering, grinding, gritty noise that was present to a greater or lesser extent—depending on the care exerted by the recording engi-

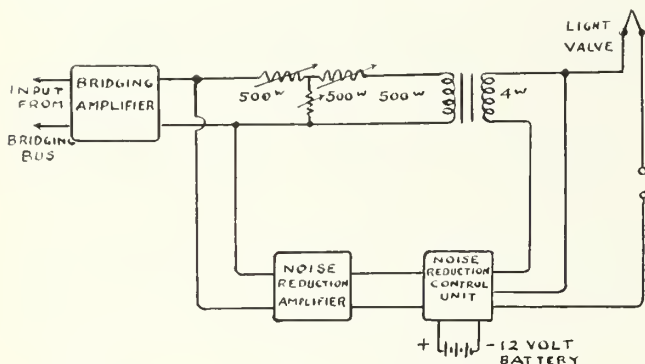


Figure 1. Block schematic diagram of connection of noise reduction equipment.

neers—in the reproduced sound of all earlier sound pictures. It is an interfering sound analogous to the static that is encountered in radio reception. By taking extreme care in all steps of the process of recording sound, the engineers generally were able to keep the ground noise below the point where it would be annoying during dialogue or music; but during those portions of the picture where there was no recorded sound, the noise often became very noticeable—even objectionable—and prevented the audience's full enjoyment of these silent sequences.

Whether or not the auditor was consciously aware of this ground noise did not particularly matter: the ever-present noise beating against his eardrums served to irritate and make him restless, preventing his full enjoyment of the picture; and even though he was unconscious of the presence of the noise, he was constantly straining his ears to hear the voices of the actors and to catch the words as they rose out of this steady blanket of noise. Because this ground noise drowned out all faint sounds, just as a low blanket of fog covers up all objects near the surface of the earth leaving only the taller objects showing clear, it served to place a limit on the lower end of the range of sound volume that might be recorded safely, and thereby materially reduced the volume range that would have been possible if ground noise were not present.

Ground Noise Conquered

Then, through the genius of engineers working on the Western Electric and RCA sound recording systems, inventions were made that, when connected with the sound recording devices of these two systems, provided for the almost complete elimination of background noise during the silent passages of the films. During all other intervals when sound is accompanying the picture, the ground noise is held to an extremely low level with relation to the intensity of the sound. As a result, the ground noise is no longer even noticeable.

The first tests of the Western Electric noise reduction equipment were made at the Paramount Studio in 1930 during the shooting of the picture, "The Right to Love"; and it proved so successful that it resulted in the development of the Western Electric Noiseless Recording System and the rebuilding of all Western Electric sound recording systems to accommodate this development.

The Noise Reduction Equipment

In the Western Electric installation, the noise reduction equipment consists of a Noise Reduction Amplifier and a Noise Reduction Control Unit. The Amplifier is a two-stage transformer-coupled-Amplifier with a push-pull second stage. The output of this amplifier is fed to the Control Unit, where it passes through a repeat coil and is rectified by a bridge-connected copper-oxide rectifier. The pulsating direct current output of the rectifier after passing through other apparatus is applied to the strings of the light valve along with the output of the bridging amplifier that supplies the amplified speech current to the light valve. This arrangement will be made apparent by the block-schematic diagram of Figure 1.

Since the Noise Reduction Amplifier receives its input energy from the output of the same bridging amplifier that feeds the light valve, the amplified output of the N. R. Amplifier is directly proportional to the speech energy fed to the light valve. Likewise the output of the rectifier in the N. R. Control Unit is directly proportional to the speech energy supplied to the recording light valve.

A twelve-volt battery is connected to apply a steady direct current to the strings of the light valve. This direct current from the battery causes the strings of the light valve to be drawn so close together that they almost touch. As a result practically no light passes between the strings and reaches the moving film in the recording machine. Since there is no exposure of the sound track, there is no ground noise introduced in the sound track. This, of course, is when no speech current is coming from the bridging amplifier to the light valve.

Functioning When Sound Is Being Recorded

When the microphone on the sound stage is picking up sounds, the bridging amplifier provides an equivalent electrical output. This output passes

through the N. R. Amplifier and after amplification is rectified by the N. R. Control Unit. The rectified speech current bucks the current from the twelve-volt battery and reduces it by an amount proportional to the amplitude of the speech current. As a result, the strings of the light valve are allowed to separate just far enough to handle the vibrations produced by the speech current from the bridging amplifier. The opening between the strings is only great enough so that they will not touch during vibration.

If a louder sound is picked up by the microphone, a greater speech current will be developed by the bridging amplifier, the N. R. Amplifier will have a greater output, and so the rectified current in the N. R. Control Unit will have a higher value. This will result in a greater bucking and cancellation of the current from the twelve-volt battery, and the ribbons of the light valve will be allowed to separate wider to handle the greater vibration produced by the increased speech current.

In every case, the separation of the light valve strings will be just great enough to permit the vibration of the strings without their touching. The result is that no more light reaches the sound track space on the motion picture film than is absolutely necessary to permit the recording of the vibratory movement of the strings. The reduction in the amount of exposure of the sound track reduces proportionately the amount of ground noise. Only during maximum sound intensities does the noise reach a maximum and it is not noticeable during those periods because of the high volume of recorded sound.

Extension of the Volume Range

Previous to the development of the noise reduction equipment the volume range of the Western Electric recording system was estimated to be approximately thirty to forty decibels, the exact range depending on certain recording conditions; but the addition of the noise reduction equipment extended the recording range some six to ten decibels downward by almost totally eliminating the ground noise. The volume range of any sound recording and re-

BY CHARLES FELSTEAD ASSOCIATE EDITOR



producing system is limited on the lower end by the point where the dialogue and music become so faint that they are covered up, or "masked," by the ground noise; and the volume range is bounded at the upper end by the point at which the recording or reproducing system of the film overloads.

By driving the ground noise to a much lower electrical level, the N. R. equipment acts to increase the volume range of the recording system.

With noise reduction equipment, even the faintest of whispers may be recorded and become clearly audible in the reproduction; and directors and sound men are able to obtain sound effects that formerly were impossible because of the blanketing of all faint sounds by the ever-present ground noise. Now when silence is required on the screen, the reproducing horns are really quiet, the attention of the audience is not distracted by extraneous popping and hissing sounds, and the dramatic effect is enormously heightened. This results directly in greater enjoyment of the picture by the audience because the ratio of recorded sound to ground noise has been vastly increased.

FRANK ZUCKER ANNOUNCES

Frank Zucker announces that in order to expand his activities in the photographic sales and rental line a new company has been formed under the name of Camera Equipment, Incorporated. Offices

and show rooms are located at 1600 Broadway, New York City.

In the show rooms, the largest and most suitable to be found in the heart of the city, are displayed all types and makes of professional cameras, accessories such as blimps, tripods, filters, panoram dollies, film cutting and editing equipment, and portable sound projectors.

Directed by skilled technicians, the service and repair department will specialize in Mitchell, B & H cameras and similar studio maintenance operations.

THE ACADEMY EXPANDS

Major Nathan Levinson was re-elected Chairman of the Academy Technicians Branch for the fifth consecutive term at the first meeting of the Executive Committee held October 13.

In addition to choosing the new Branch Chairman, the Committee approved 49 technicians who have the necessary qualifications for Branch membership, all of whom will be issued invitations to join the organization within the next few days.

During the past year the Branch membership has been increased by 102 technicians, there now being a total membership of 327 enrolled in the Branch (83 in the Art Directors, 23 in the Equipment, 36 in the Film Editors, 91 in the Photographic, and 94 in the Sound Sections).

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Hollywood Offstage

By EARL THEISEN, *Associate Editor*

PEOPLE who live in glass houses—are right in style! Glass bricks, a recent innovation in the art of home building, are being used in the construction of the ultra-modern apartment set in Columbia's "Theodora Goes Wild," starring Irene Dunne with Melvyn Douglas.

The new type bricks, Stephen Gooson, Art Director at Columbia Studios, points out, are finding favor among building engineers because the bricks permit light and healthful sun rays to enter but not the neighbor's eyes.

Four different sound systems are being used to record Grace Moore's singing in the forthcoming Columbia Studio film (tentatively) titled "Interlude." With the introduction of new sound systems and the recent improvements in sound recording, Co-directors Robert Riskin and Harry Lachman have decided to record in all systems and then select the best "takes." The four systems to be used are the Western Electric Variable Density, the FRPI "push and pull," the RCA Ultra Violet System, and the RCA "hill and dale" recording made on gold plated records. This last named system was used in filming Grace Moore's "One Night of Love," but the film recording was found to be more adaptable to the present method of cutting and distribution.

Metro-Goldwyn-Mayer Studios now have a "mike" boom made of duralumin that balances itself as the boom slides in and out to carry the microphone over the heads of the players during "traveling shots." A counterweight moves backward and forward, keeping the boom in constant automatic balance which eliminates any jerks during movement of the microphone.

It's odd, but most of the male Warner Brothers' stock players were educated for the ministry while the women intended to be teachers.

Many quirks are introduced into the contracts of film players. Edward Ellis, character actor at Paramount Studios, has a clause which he insists must be. His housekeeper must accompany him to fix his dinner on all extended location trips. In Gladys Swarthout's contract, duly attested before a notary, her husband, Frank Chapman, who is also her manager, is not permitted on the sets where the wife is engaged in love scenes. Marsha Hunt specifies that she need not be required to take "leg art" which newspapers love so much, or do they?

To Freddie Bartholomew falls, according to the

studio, what is conceded the record in character roles. This youngster is to be made up to represent an 85-year old man in Rudyard Kipling's "Kim."

And talking about disguises, at Hal Roach Studio, the prop department tried to create something edible that looked like excelsior which "Ollie," the 17-year old comic mule, could eat with a certain gusto for a gag in "Way Out West." Well, the situation went on for days and the burro would not eat the fabrications; finally the problem was solved when it was found the burro would eat excelsior.

A piece of leather was made to look so much like steak for another of the Roach gags that Oliver Hardy made a sandwich out of it and palmed it off on Rosina Lawrence. Now, the studios can make prop steak and can make it out of leather so it resembles the real thing; if they could make real steak not look like leather some big chain restaurant would probably pay a fancy sum for the formula.

They've succeeded in putting Mae West's walk to music. Her swivel meander is to be glorified in swing time music for her next film, "Go West, Young Man."

Chico Marx explains between scenes during the filming "A Day at the Races," some of the technical terms used by soundmen. He says, "non-sync" means an apartment without a wash-bowl; "ohm," an English ouse; "charger," a big white horse; "resistance," a new girl; which mentions a few of his new dictionary.

The average major studio in Hollywood has about seventy different departments.

Eleven hairdressers have been hired to take care of the wigs worn in Frank Lloyd's production, "Maid of Salem."

Two hundred yards of drapery material, 54-inches wide was used in the foyer scenes of Paramount's "College Holiday."

The "Big Broadcast of 1937" will be shipped on the 2000-foot reels which will permit this ten-reel

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film to be handled in five reels. It is a saving in time, labor, and now the projectionists will be able to rest longer between reel changes.

Lance Baxter, technical director for Frank Lloyd on "Maid of Salem," is wearing a tape plaster as a result of his willingness to be a human guinea pig. He broke some ribs after volunteering to fall twelve feet out of a tree as a preliminary test for Claudette Colbert, who was to do the tumble for the camera. Miss Colbert later did the fall with the cameras grinding, but was not hurt.

A caravan of trailer dressing rooms for use in the filming of "Rainbow on the River," Bobby Breen's starring musical for R.K.O.-Radio release, has been bought. Sol Lesser, the producer of the film, says that it is just a question of time until complete movie studios will be placed on wheels which will be not unlike a traveling city. The mobile studios will be designed so the shooting unit may go to the location with ease. Huge trailers and motor coaches will house the technical crew and other workers, the property department, electrical, wardrobe, and so forth, will be used, according to Lesser. The studios now have the sound units installed in trucks, and it requires no great stretch of the imagination to see the possibilities of a trailer studio for location trips.

Christmas spirit is beginning to reign in Hollywood. The cartoon studios are busy on Santa Claus films. Other stars are picking up things, and the

gyp "parfume" salesmen who exchange hard cash for colored water each year are planning their foray. Carole Lombard has ordered 3500 Christmas cards.

Now let's talk about the public's demand for better pictures and their unwillingness to go into the theatre after the better pictures are made. "Class" films, such as "Romeo and Juliet," now playing at the Carthay Circle, the road show theater in Los Angeles, needs a special build-up to get the public into the house. By special build-up, I mean a campaign that puts the political elections in a back seat. Special matinees for children, clergy, women's clubs, educators, and others, luncheons for the discussion of the film, lecturers who traveled and talked to groups interested in better films, the telephone, mail, study guides, and a variety of things were part of the campaign.

According to Rhyllis Hemington, director of Public Relations of the Fox West Coast Theatres, "better films will undoubtedly arrive some time, but the public will not accept them without the aid of educators, ministers, and others who must educate the theatre audience to want better films."

It is a long bridge that must be crossed by the dinner bucket carriers before they will prefer to see a "class" film of the type of "Romeo and Juliet," and the motion picture industry is to be commended on its courage in continuing to make such films when over and over they have proven poor money makers.

Willoughby's Announces New Camera

By KARL A. BARLEBEN, JR., F.R.P.S.



NEW miniature camera costing only \$25.00 has just recently been introduced by the Willoughby Camera Stores, Inc., 110 West 32nd St., New York City. It is called the Wirgin Midget, and uses standard 35 mm. motion picture film in the same manner as the Argus, Contax and Leica. Beautifully, strongly and finely finished, the Midget is certainly a bargain at the price. It is fitted with a quality f:4.5 lens built into a smooth-working shutter which gives speeds up to 1/100th second. As is common practice in miniature cameras, the Midget lens assembly snaps in and out of the camera body so as to make it compact when not in use.

The expensive miniature cameras are priced so high that many thousands are deprived of owning them. The Midget offers everyone a quality miniature camera at a price he can easily afford. For casual snapshots, for candid photography and for general all-purpose picture-making, the Midget offers its services. It is expected that it will appeal especially to those who own larger cameras, yet want a miniature outfit for odds and ends of photography that ever so often turn up. Some of the high-priced cameras involve too much of an investment for such work, whereas the Midget falls right in line as the extra camera, ready at a moment's notice, at a low price.

All standard 35 mm. camera equipment, such as developing tanks and enlargers, can be employed for the processing of Midget films, hence no extras are required.

Why not get a Wirgin Midget and Eveready case and use it as an auxiliary camera? Take it along with you whenever you go out picture-taking, regardless of whether or not you carry also your standard camera. You will find new delights in picking up odd and stray shots which previously had to be passed up with the larger camera.

But don't take my word for it. See the camera yourself at your local photo dealer. Notice its beautiful appearance, its sturdiness, its carefully made mechanism, its practical design.

If you prefer, you may request complete details by writing to the Willoughby Camera Stores, Inc., 110 West 32nd St., New York City.

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Pictures will be shot in accordance with your written or telegraphed instructions. Prefer part of script with order to properly fill requirements and avoid errors. Be sure to state amount of footage required for each scene.

Price, U. S., \$5.00 per foot for silent shots in amounts of 100 feet or less.

8x10 stills U. S., \$2.50 each for negative and one print.

These prices are for film shot anywhere in China. For film shot outside of China an additional charge will be made for transportation to location and return to Shanghai. For amounts of footage in excess of 100 feet deduct 25 per cent of price quoted. As Government restrictions prohibit undeveloped film from leaving the country, the negative will reach you developed, plus the print. The import duty will be paid by the consignee.

Price per foot includes Eastman negative stock, cost of necessary permits to photograph scenes, camera work by an expert American cinematographer, negative developing, positive print, censorship fees, packing of film, EXPORT DUTY, and transportation costs in China.

Your order must be accompanied by a check for approximately 50 per cent of amount of order, plus cost of transportation if film is to be made outside of China, balance C.O.D. Satisfaction guaranteed or money refunded. Allow four weeks for your letter to reach us by mail, one week for shooting (in China) and four weeks for finished film to reach you. Correspondence invited.



*Associated Screen
News Cameraman,
Montreal, Canada*

"SHOOTING"

By ROY TASH

I DON'T mean shooting at five minutes past two; what I do mean is celluloiding five famous babies who have attracted world-wide interest since their birth over two years ago, the DIONNE QUINTUPLETS.

In a previous article which I wrote especially for the "International Photographer" I mentioned having the distinction of being the motion picture cameraman who was first responsible for putting the "Quints" on the screen which I photographed exclusively for Pathe News. Fred Davie of Toronto is credited with making all the stills.

When the assignment is received at head office to cover the "Quints" it usually means a hurried trip by sound truck to "Quintupleland," a full day's drive from Montreal (approximately 360 miles). Most of the nursery shots are made in the early morning around 7:30. That means being at the hospital around 6 o'clock in order to get our paraphernalia into readiness.

The reader might be interested in knowing just what equipment and technique I use in shooting these babies. Getting good baby pictures is by no means an easy task; it is a problem, and that problem is in the hands of the man behind the camera. Our most successful procedure is to set up our camera and lights and then wait for the children to "do their stuff."

All babies are natural actors as long as you let them alone to do as they like. They cannot be directed and a script is almost useless since you seldom can adhere to it. It is very difficult to get youngsters to do certain bits of action called for in a scenario, since they cannot be depended upon.

I find from my past experience in shooting the "Quintuplets" that the most natural pictures are made when I leave them alone and let them do their own acting undisturbed. Here is a very good example of this: Recently we were at Callander, Ontario, shooting more baby pictures. I always use a hand-cranked Bell & Howell for most of my cut-in shots; it is always set up in case of an emergency and as a "stand-by" camera.

At one time we had all five kiddies gathered around the Bell & Howell, which was at a low angle set-up, when one of the children took a sudden interest in the camera. This action was shot with the sound camera and all five were interested in one part of the machine or another. One would peer through the view-finder from the lens side, another would be winding the film crank and another would be turning the film crank; so you see they were doing their own acting naturally, because they were left alone and undisturbed. The scenes seem to flow into the magazine of the camera.

No matter what the children do, their action is always appealing to the theatre audience. Many a rare scene has been shot which could be prized as a gem, possibly never to be duplicated again, just because the camera was left running and we did not disturb them in what they were doing. I would say that making baby pictures is like shooting animals and birds, you've got to be alert, undisturbing and await your chance; by so doing you will be rewarded in the end.

The "Quints" are born actresses and, as a general rule, not hard to get along with, especially after their morning bath and breakfast, when they are always in a playful, natural mood. One can't predict what the babies are going to do; you must have a great deal of patience with them. Like most children, they sometimes become very stubborn. One time it might be Marie kicking up a rumpus and the next time it might be Yvonne, Emelie, Cecile or Annette; you never can tell; it all depends upon just what mood they are in at the time. We have to work deftly, swiftly and smoothly without attracting their attention.

All scenes are made under the personal supervision and watchful eye of Dr. Dafoe, whom the children idolize. He can coax them to do most anything. In most cases we have the doctor just outside our camera lines coaxing and clowning with them. This puts them in a happy mood and at ease, making them less conscious of the camera. Recently I devised a black painted beaver board collapsible screen measuring about six feet high and eight feet wide, behind which I hide my camera and self.

This has an opening in front through which I shoot; it is not unlike a Punch and Judy stage. The reason we built this so-called contraption is because the cameraman is least noticeable to the children when they are being photographed. The "Quints" are very conscious of the camera and always watching every move and turn we make. On shooting our interiors we have to steal most of the shots in order to get natural action.

They are at a curious age now and always ready to investigate, or should we say "just being nosy"? As a general rule, one child usually mocks the other.

AT FIVE PAST TWO"

in permission of Hon. David A. Croft, Chief Guardian of the Quintuplets)

Lewman Colortours, Warner Bros. Vitaphone Release



Here are the "Quints," playtime over, and on their way to dinner. Four of them are interested in the one with her back to Mr. Tash and his camera. You may name the others to suit yourself—you know them.

For example, if one baby were to roll a ball, the other four are almost sure to follow.

A scene which I made recently proves this—Mademoiselles Leroux and Noel, the "Quints' " nurses, were teaching them the art of dancing. The nurses would hold out their dresses and would turn around and around slowly, and so would the chil-

dren follow suit. Then they would curtesy and the children slowly and rhythmically would repeat their action almost flawlessly.

Shooting a couple of thousand feet of negative in the short space of 30 or 40 minutes is no cinch when you have to change lenses for close-upping, etc., and

(Turn to Page 29)

AMATEUR MOTION PICTURE DEPARTMENT



I Prefer a Simple Outfit

As Related to

F. HAMILTON RIDDELL

I WAS recently talking with an experienced amateur movie maker who has this to say about home-movies:

Just thirteen years ago, 'way back in 1923, the Home Movie Bug got me. From many years of still picture taking as a hobby, the new medium of motion in home pictures captured both my imagination and all my spare time. In those early days, there wasn't a great variety of 16 mm. equipment but I bought all that was available. I didn't stop with camera, projector and screen. I invested in tripods, large and small; special rewinds and attachments; with various cases for each piece of equipment. As the industry broadened out and more varied accessories were to be had, I bought filters, all kinds and types; automatic fade devices; special purpose lenses; and trick vignettes. I was getting in deeper and deeper. Then came a confusing array of trick gadgets and other movie attachments too numerous to mention. I went in for cumbersome projectors stands and cabinets; miniature daylight screens; and so-called squint tube exposure meters. The old type color processes were introduced next, which involved a considerable expenditure for a new camera with ultra fast lens and a high powered projector, each fitted with special filters, before I could even begin to take and show color.

Well, pretty soon, I got fed up! After doing some serious pondering, that pack of movie unnecessaries was disposed of once and for all time. From then on, so I made my decision, I'd shoot home-movies with the simplest kind of outfit. And I've never regretted my decision!

First of all, I bought a new modern camera, a good one. Not one of the most expensive kind nor one of the cheapest, but a good standard make. It is a simple outfit, a compact one, equipped with a fixed focus lens of F:2.9. This lens is entirely satisfactory for my needs and obviates the necessity of focusing each shot. In my opinion, most home-movies turn out better if taken with a universal focus lens. Have you ever tried focusing friends with an adjustable lens only to have them move up on you? You can't control friends like a professional movie "stand-in"! A universal focus lens, therefore, is plenty good enough for me.

Owning a spring driven camera, I have no need for a tripod. For I've learned to **heed** that sterling advice: **hold the camera steady!**

I do have one or two filters but no longer do I own an endless variety of them. In the old days, I had so many I never did get time to learn their characteristics. So the ones used now are of the heavy type because whenever I must use a filter, I prefer "over-correction."

My old screen, an average size, still serves well enough. All the present craze for huge screen images in the home, it appears to me, is too faddish and unnecessary. A 30 by 40 inch screen will do the job just as well for me.

My projector is a good one. It is the one unit of any home-movie outfit that generally is used the most; thus, it should be well-chosen. I saw to it that my projector is equipped with a fast projection lens and adequate wattage lamp. This results in my movies being as brilliant as is necessary for the home—and for best color pictures—yet giving screenings which do not tire the eyes of spectators.

As to camera film. Although there remains a large choice of black and white emulsions, I now use only one—super pan. By so doing, my exposure calculations are always the same and my filter factor remains constant. If the photographic light is poor, I know that super pan will get the best possible pictures. If lighting is of the best, I can then cut down my lens diaphragm for increased depth in my movies. And whatever the conditions of light, super pan will give the best, most lifelike monotone rendition of any subject.

Now that natural color filming is really practical, improved, and possible without a lot of bother and special equipment, I find it fascinating new movie work. But mind you, I only attempt color when there's **really** a colorful subject in front of my camera and when lighting conditions are ideal. Color on the home-movie screen, of course, is always interesting. But it is only **truly** beautiful when it has been well-recorded. For this reason, amateur movie-makers should give it their earnest attention and exercise even greater care in making exposures and so forth than they sometimes allot to regular black and white pictures.

So much for my outfit and "taking" methods—now for the "showing" apparatus.

Here is where I suppose I vary from usual projection procedure; and where if I desire any trick effects in movies, I put them—while I'm projecting. Attached to my projector there is a color wheel and a fade-glass. With these two simple attachments, I can add colorful tints to black and white movies; and supply fades in any sequence of my film that seem appropriate.

Every home movie maker, unlike the theatre pro-

jectionist, knows "just what's coming" in each reel of film. Therefore, it is a simple matter to vary the color wheel to any desired tint as the scenes strike the screen. It is for this reason, it seems to me, that tinted stock is unnecessary; you can duplicate its effect so easily, you needn't make it permanently so, as with tinted base films.

And fades. What a lot of bother they can be if attempted on the camera! You need a tripod; a final sequencing of scenes; and more hands than the good Lord gave you to set-up, shoot, keep your subject in range of the lens, and at the same time work your fading device. With the fade-glass on the projector lens and the machine in operation—all that has to be done is fade—in or out—when-ever the film sequence demands it. And remember, because my film has been edited, the fades will come at exactly the right spot. This cannot always be anticipated in camera-made fades unless one is shooting from a precise continuity, which is

not generally the case in average amateur movie making.

To those who do not feel qualified to judge the proper changes in tints or when to use the fade-glass, a mark on a single frame near the end of a sequence will act as a signal. This mark need only be a pin-hole in the upper right-hand corner of the frame. The signal is not unlike the "change-over" dots in a professional feature.

As you have noted, my entire home-movie equipment consists of but camera, two filters, screen, projector, color wheel, and fade-glass. Yet I can put on a show that compares favorably with many pictures having been made with fancy, special equipment, which took unlimited time in production. And for good measure, I can include some shots that are as candid as the best miniature, which your loaded-down-with-everything-camera outfits can't possibly catch!

Yes, sir, I prefer a simple outfit!

CINEMA-TIDINGS

Amateur Motion Picture News

New Folder of Weston Film Speeds: Up-to-date speed values for all films and plates in common use, both for stills and motion pictures, are given in a new folder just published by the Weston Electrical Instrument Corporation, Newark, New Jersey, manufacturers of the well-known Weston Photronic Cell Exposure Meters.

The list of almost 200 Weston speed ratings includes the newer color films as well as black and white emulsions of domestic and foreign manufacturers, with values for daylight and incandescent light.

In addition to film speed ratings, the folder contains suggestions for exposure of color films to aid color fidelity within the more limited exposure range of this type of film. Copies of the new folder are being mailed, it is announced, to all registered owners of Weston meters. Other Weston owners whose names are not now on this list may obtain copies by writing the manufacturer.

Kodachrome Type A Announcement: When Kodachrome Type A was announced for making 16 mm. indoor movies with Photoflood lamps without the aid of a filter, the response was spontaneous and the new full color film was acclaimed as one of the greatest forward steps in home movies.

And now, Kodachrome Type A is announced by the Eastman Kodak Company for indoor movies in 8 mm.; and for "stills" with Kodak Bantam Special; Kodak Retina and similar miniatures.

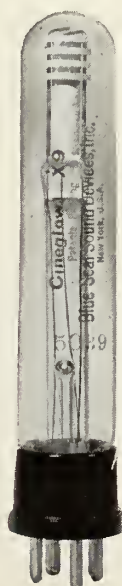
This new film is color balanced to compensate for the quality of light supplied by Photofloods for movies; and Photoflood or Photoflash lamps for "stills." Consequently, no filter is necessary for indoor pictures with such artificial light.

Kodachrome Type A may be used in the daytime too, by placing a Type A Kodachrome Filter for daylight over the camera lens. Thus, this new Kodachrome conquers new fields in amateur color photography—movies and stills.

The list price of Kodachrome Type A 8 mm. rolls, including processing, is \$3.75—same as regular 8 mm. Kodachrome. For "still" work, Kodak Bantam Special rolls, K828A eight exposures, are priced at \$1.75. For Kodak Retina and similar 35 mm. miniature cameras, the 18-exposure K135A rolls of Type A Kodachrome retail at \$3.50. These prices include processing and return postage within the territorial limits of the United States.

Bell & Howell 16 mm. Talkie Catalog: The rapid progress being made in non-theatrical 16 mm. talking pictures may be gauged by the new 56-page catalog of library films just issued by the Bell & Howell Company. The book lists more than 300 reels of 16 mm. sound film, contains more than 40 illustrations, and offers interesting suggestions to program chairmen and others on the selection and arrangement of talking-picture entertainment and education.

Among the features announced are "Don Quixote," starring Feodor Chaliapin; "William Tell," starring Conrad Veidt; "The Viking," "Tarzan," "Thunder Over Mexico," and many other outstanding dramatic hits. Much longer is the list of adventure, travel, nature, sports, historical, and musical



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films, and also the list of comedies and cartoons.

Recommendations as to audience suitability are made in the form of a simple index key—indicating whether the film is best suited for general entertainment, home, school auditorium, classroom, or church use. Only three films are keyed as intended primarily for mature audiences.

Most of the releases, such as the productions of Educational Film Corporation, Principal Pictures, World-Wide Films, and other leading Hollywood and foreign producers, are available on rental only. In other cases where prints may be purchased outright, this is indicated.

The book is priced at 15 cents per copy and may be obtained from Filmosound Library Headquarters, 1801 Larchmont Avenue, Chicago, Illinois; or from its branches throughout the country.

"Elementary Photography": We have just finished reading this Eastman publication, which will prove a new and stimulating addition to anyone's photographic library. "Elementary Photography" is the combined work of C. B. Neblette, F.R.P.S.; Frederick W. Brehm and Everett L. Priest, B.S., M.A. While the authors deal primarily with the subject of still-picture photography, the book contains so

much information that is of paramount importance to movie makers also that it can be read with interest and profit by both classes of amateur photographers.

With a short introduction, briefly tracing early efforts at picture-making, Unit One of the book covers general photographic practices. Instructions for the making of an elementary pinhole camera are given. Unit Two discusses the working of a camera and its lenses and shutters. Units Three and Four are concerned with laboratory procedure, including the proper judging of the quality of negatives and prints. The making of lantern slides, enlargements, and mounting is not overlooked. Unit Five deals with purposeful photography.

Helpful, practical suggestions for all kinds of picture taking, both interiors and exteriors, by natural and artificial light, are given. Up-to-date exposure tables and other data are contained in the volume, and the qualities of modern film emulsions are made most clear. All in all, "Elementary Photography" is so well written and contains so much valuable information that it will prove well worthwhile to all amateur photographers.

QUESTIONS and ANSWERS

By F. HAMILTON RIDDELL

1. In showing my personal movies the pictures are steady and clear on the screen. Yet when I run some professional reduction print (not all), they are "jumpy," flickering and unclear. What is the matter?

Since your own personal pictures project satisfactorily, we can assume your projector is in good running order and that therefore the fault must lie with certain of your reduction prints. It would appear that the trouble is caused by inferior laboratory work, and a print has been released which should never have left the lab, as it was not up to standard. It is a good rule for amateur film buyers to insist on having film subjects screened before buying same. For while a print may seem all it should be to the naked eye, a screening, in the last analysis, is what tells the story.

2. Whenever I stop my projector for "stills," the motor runs wild. Cutting down the speed control is of no avail; the motor continues to race, sets up excessive vibration which is transmitted to the screen, and is very noisy. What can be done?

Your complaint is a common one from those movie makers who make much use of "still" projection. It would be our suggestion that you install a separate motor switch, which will work independently of your lamp-motor, one that you are now equipped with. By means of this separate motor switch, the motor can be shut off entirely when viewing "stills"; and does away with the bother of continually readjusting the speed control each time the projector is stopped for "still" projection.

3. I have great trouble in obtaining steady pictures, but do not wish to be burdened with a tripod. What do you suggest?

We suppose, of course, that you have honestly tried to hold the camera steady during exposure.

Many cineamateurs do not, as usual, give this important rule proper interpretation or thought. Fundamentally, a tripod is the **best support** in the world for any camera, but if you do not desire to make use of the best means, then it is suggested that you invest in one of several substitutes. There is the walking-stick which extends into a one-legged camera support. Other similar devices include a short camera support, resting on the belt of the operator, and so forth. For those who cannot hold a camera steady, these accessories are most convenient.

4. How long must a film remain under pressure in a splicing machine?

Probably the most common cause for inferior splices is hurried application of pressure and release thereof, in splicing. Movie makers, having heard now quickly film cement evaporates, conclude incorrectly that it is only necessary to apply pressure for a moment, then release same, and that the splice has set. This is not so in the case of the great majority of amateur splicing machines. It is good practice to remove excess cement shortly after applying pressure, but this must be done quickly and expertly, and pressure once again restored to the splice. Sufficient time **must be allowed** for the chemical weld to set. The splice, therefore, should not be released from pressure in less than 10 seconds; a little longer time is even better.

Note: As a service to amateur movie makers, we extend a cordial invitation to write in questions which will be answered in this column. Address all such letters to:

Questions and Answers Column,
THE INTERNATIONAL PHOTOGRAPHER,
506 Taft Building,
Hollywood, California.

RIGHT OFF THE REEL

By F. HAMILTON RIDDELL

8 MM. Film Viewer: A film viewing machine, attached to an editing board, can never be more valuable than in assembling 8 mm. film. Single frames of this narrow-gauge film stock tax one's eyesight to the utmost. With a film viewer each frame appears, enlarged, upon a miniature ground-glass screen. Therefore, it is only exercising good common sense, when buying an 8 mm. outfit, to invest in a film viewer at once.

Increased Speed for Kodachrome: Kodachrome film, both 8 mm. and 16 mm., has been speeded up and the improvement greatly increases the picture-taking range of natural color work. Regular Kodachrome because of this improvement should now be "shot" at one stop smaller than the earlier type. Kodachrome Type A, for indoor use, has also been increased in speed; and it is so noted by a



Beautiful effects of an after-rainstorm shot.

label now pasted on the outside of each carton calling this fact to the user's attention.

After a Storm: The accompanying illustration shows the beautiful result that can be obtained by amateurs who film right after a rainstorm. Angry storm clouds, pierced by shafts of sunlight, make an unusual effect. It is well to under-expose such shots to secure the right effect.

Weston Ratings: The new Weston folder of film speeds, for use in conjunction with Weston Meters, is most timely. For it gives latest information on exposure for all types of Kodachrome film used in amateur movie making.

For the newly announced Kodachrome "still picture" emulsions (September, 1936, issue of "International Photographer"), the Weston rating is eight

for daylight; and three for interiors with Photoflood lighting.

Also listed in the folder is Agfa Ansco Corporation's newest 16 mm. panchromatic camera film—Hypan. This latest Agfa film is rated by Weston at 20 for daylight; at eight for interior work.

Rainy, Fall Weather: The more or less inclement fall weather need not deter cine workers from shooting exteriors. Fast film and fast lenses will assure proper exposures. One word of caution, however, when filming in rain or under extremely moist conditions. Be careful that water does not come into direct contact with the front surface of your camera lens. This will cause blurred pictures. If water or traces of moisture do get on the lens, wipe it away carefully with a soft, lintless cloth. Many interesting shots can be obtained in the rain, due to the varied reflections caused by the wet weather.

Talking Turkey: As a prelude to your Thanksgiving film, what could be more appropriate than some shots of a turkey farm? A short spin to the country will take you "on location," where you can record the gobblers as they are being "gotten into shape" for that fateful day, to Mr. Turkey, otherwise known to humans as Thanksgiving Day.

Various speeds for Titles: With a variable speed movie camera, there are several available exposure speeds for making titles. Most movie makers shoot titles at normal 16 speed, usually reading the title-copy twice over for proper footage. Did it ever occur to you that the use of some other speed affords decided advantages not possessed by normal 16?

By selecting eight speed, for example, the title board illumination may be cut down considerably. Or if desired, the illumination may remain the same, yet the lens diaphragm can be stopped down one stop smaller, giving improved definition. Titles shot at eight speed must be read over four times to obtain the same footage as when photographing at normal 16.


Perhaps for some, 24 speed is the happiest selection. With normal illumination, 24 speed only calls for increasing the lens setting by one-half stop larger; but the speed saves much time. It is only necessary to read the title over once because the film is being exposed at a faster rate than normal. Thus it is that 24 speed not only provides sufficient footage per title to provide for the reading idiosyncrasies of a mixed audience, but it also results in a correct amount of footage for easier editing.



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A Short Story About Color

Contributed by a Cameraman

O the practical mind that is willing to grasp a problem to determine its basic principle there is no mystery about color.

To the intelligent Director of Photography of well grounded practical experience there is no more mystery about color than there is about any other medium of photography.

Hollywood, is not a poor place to keep a secret. No more so than New York, London, Berlin, Calcutta, Bombay, Mexico City or any other center of motion picture activity; in fact, many secrets of the trade have been very well guarded until the time of their release from those who might have otherwise created damage with the knowledge could it have been secured in advance; but, regarding color, there are no mysterious secrets to baffle the intelligent mind.

There are patents claimed and formulae of chemical compounds cautiously and silently developed and discussed, with much show of whispering, of raising of eyebrows and of veneration that to the practical mind surrounds the subject with a cloud of mystery and momentarily sets up the question of the successful application of color as a photographic medium to be desired.

These same theorists, if suddenly called upon to demonstrate the actual practicability of their abstract principles almost always fail miserably or excuse themselves out of the situation with a mighty manner of assumed importance; thus, the application of color, as applied by the several processes in use today, by any of which satisfactory commercial results can be obtained, has created a mysticism that, in reality, is really impotent.

That color can be successfully transferred to the screen is demonstrated by the fact that both the Eastman and DuPont manufacturers of film have created a successful medium of color-sensitive emulsion, after vast research and expenditure of time and money, a medium that need leave no doubt in the mind of any practical, trained mind of experience of the successful outcome of photography in color.

It is sad to contemplate the manner in which this mystery has confused the intellect of many brilliant producing minds when the same careful investigation given to daily problems would reveal the simplicity of operation and commercial possibilities of a desired subject in color and the ability to "stand up in the face of actual firing."

It is not intended to imply that a novice can achieve a glamorous success any more than in any other line of motion picture activity; the same care of operation is as necessary in color, as in any other process of photography or the colors will clash and fight among themselves since color is the contrast of the subject. One of the main faults of color production has been the emphatic splash and mad riot of color by producers insisting on outdoing nature and, in many instances, of trying to create a color subject out of an uncolorful one. And, as such, the vehicle of the story becomes so overburdened that it makes for annoyance to the mind of the audience instead of entertaining it.

The expenditure for color production needs be but little more than any other process if carefully

and practically managed. The only increase need be in the raw stock and laboratory process. The time element can be as fast as the directorial staff is practical and the accomplished result is always desirable. Every color process has its basic principle of operation which, if faithfully adhered to will produce its proper result. The method of production must likewise be carefully planned and follow its basic method for the result desired and then adhered to constantly to the end, but where the method of production is changed and broken down by experimenting at different periods throughout production, only a mixed result can be the reward.

The fundamental experimenting of the several color processes has been finished, and where the commercial minded producer accepts this fact and will not permit himself to be led astray by the expression of abstract theory, can count on bringing forth a success in color. There may be differences of opinion, perhaps, but so is there in every other creation of effort that pessimists get together to criticize.

It is no more necessary to experiment with exposure in color than in any other method of photography. Exposure is governed by a known factor. As in any other method of photography, a proper amount of light is required to register the correct exposure of the subject required, but no more.

A certain alertness is constantly necessary, but is not such practice necessary of any worthy effort? The matter of correct focus need not be approached with fear. Since the camera used is a mechanical instrument it can be properly adjusted to correctly meet the requirements of focus by eye or mechanical methods, enabling the operator to set the correct focus under any condition that the camera will operate. It has been done.

It is erroneously stated that miniatures can not be successfully done in color. Miniature scenes of real worth have been accomplished in color where the will and desire went to work together, both in normal speed and high speed and equally well have split-screen, double-exposure, dissolves and wipe effects been satisfactorily accomplished.

If those wishing to use color commercially will turn a deaf ear to the theorist and go to work with the same hard practical sense that has created success in other efforts that have been hedged about with dark theory, color will advance to its proper place in the industry along the several channels of process now in effect, but practical studio-trained minds must do the work; it will never be accomplished by the fear spreading, plodding theorists who challenge every step of advancement before the thought can be given a chance to rise.

OBITUARY

James Diamond, a member of Local 659, since its inception, passed away on October 17. He was an old timer in the business, starting with Norma Talmadge way back in the silent days. He was forty-two years old. Deceased was a man of great popularity in the studios and most successful in his work. To his surviving sister, Regina Brown, the International Photographer extends its heartfelt sympathy.

The Land of the Lapp

By LEN H. ROOS, F.R.P.S.



Right—A Lapp camp, north of Tromso northern Norway, north of the Polar Circle—Len H. Roos, F.R.P.S. Center—Christmas fish drying in a fishing village in Sweden. The fish are caught in the summer months and after a salt bath are hung up to dry daily until they become as hard as a board. They are sold at Christmas time as a special delicacy.—Len H. Roos, F.R.P.S. Left—A Lapp looks interested in the color camera in northern Norway. His home in summer is about 1200 miles from the North Pole.—Len H. Roos, F.R.P.S.



RAP on the door and a voice said: "It's eleven thirty and the sun is shining!"

Getting out of bed was an effort. I lifted the blind and looked out—the sun was shining all right; shining brightly at 11:30 at night.

I got the cameras out and worked until 2 a. m. You can do this in Norway, north of the Arctic Circle, but if some Hollywood producers get the idea from the above that they can work their cameramen 24 hours a day, over here, they had better check up on the winter schedule of the sun before moving over. For a long period in the winter it is dark all day and all night.

For color photography the Lapps are ideal subjects. They wear bright colored clothes and are a very picturesque people. They have huge herds of reindeer which they use to draw their sledges; supply them with food and milk; clothes, leather and bone. They grunt like pigs (the reindeer, not the Lapps) although the Lapps grunt a bit when catching the reindeer with a lasso.

Small in stature and with a Mongol cast of fea-

tures, they lead a nomadic life. In summer they live in a skin tent that looks a great deal like an American Indian tepee, and a stick and earth house in winter.

The Lapp is a fairly good actor and will do anything for the camera if some coin changes hands. If no coin is tendered, he disappears. This, no doubt, is the origin of the term "Lapp Dissolve."

His costume consists of tight fitting breeches of reindeer hide, leather shoe-packs turned up at the toe, a bright blue coat, cut full in the back and trimmed with orange, red and white (when new) bands. His hat is usually blue with a large bright red pom-pom of wool yarn.

Every Lapp home or Gumma that I saw was equipped with a hand sewing machine and plenty of dogs. Eight hours of flying brought me to the Lapp country north of the Arctic Circle, and just about 1,200 miles from the North Pole. I flew over mountains, glaciers and fjords to get to this interesting place—I've eaten fish until I never want to see them again—I've been plenty cold on this trip—but the pictures were worth it.



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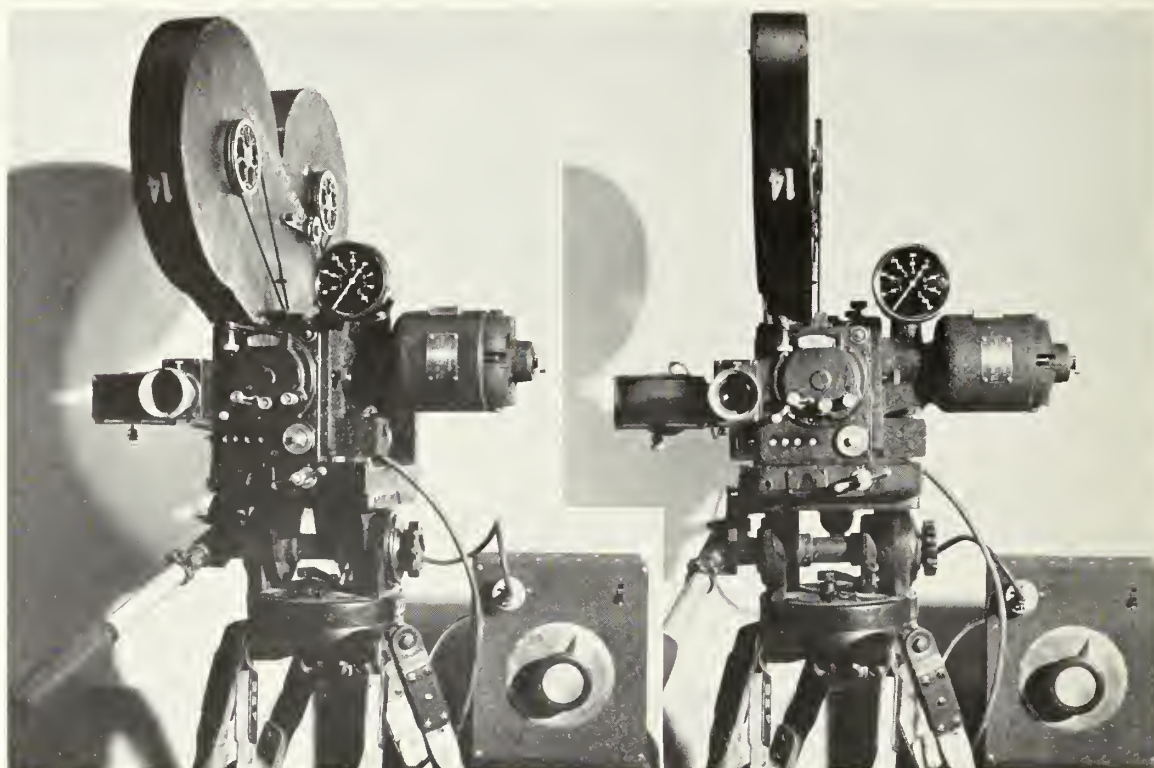
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Columbia Hi-Speed Motor Drive

By ALFRED S. KELLER



THE camera is cranked no more. The last application of the camera crank—the hand-driven gear box for slow motion photography—has been supplemented by an electric motor. Just as definitely as the variable speed motor superseded the crank as motive power a decade ago, so now does the electric drive successfully cause the obsolescence of the well-worn gear box and its crank.

The gear box had many disadvantages. Chief among these was the uneven application of power, especially at higher speeds on long scenes, causing fluctuations in exposure. The maximum film capacity of the magazines was about 400 feet, because the added load on the crank of a long roll made operation impossible at higher speeds.

These 400 foot lengths, many times, were just short enough to miss the important action. The absence of an automatic release to disengage the drive in the event of one of those numerous buckles was a mechanical oversight.

Also an operator always had to stand by the camera to supply the energy. This was a decided hazard in some instances, such as the photographing of explosions, etc. The camera was more or less limited to static shots because of the small horizontal and vertical arcs imposed by the separately mounted gear box. The only exceptions were when a not overly practical flexible shaft was used, or when a tilt head was built upon which were both camera and gear box—at best unsteady. Lastly, the top speed of these gear boxes was approximately 128 frames/sec. or $5 \frac{1}{3}$ times normal (24 frames/sec.), as they were designed during the silent picture era.

Considering the aforementioned drawbacks of

the gear box, it is evident that a motor drive could correct all of these disadvantages. It would supply even power; could be strong enough to pull a full 1000 foot-length of film; could have a buckle trip to stop the motor in an emergency; could be remotely operated; would be mounted on camera proper, giving unlimited freedom of pan and tilt; and could be able to attain the speed of 192 frames/sec. or eight times normal (maximum speed recommended by camera manufacturers).

With these prerequisites in mind, several motor drives were built by different organizations. While they were all better than the gear-box, they fell short of perfection because of new mechanical and electrical problems involved, namely, vibration from motor gear-drives and fluctuations in voltage from the rheostat caused by overheating with incorrectly measured resistances.

From these initial attempts, Mr. Emil Oster, head of the Columbia Camera Department, and Mr. John Durst, in charge of Columbia Precision Machine Shop, collaborated on a perfected design for a hi-speed motor drive. Taking into consideration the fallacies of their predecessors, these two men contrived to make the camera as expedient at super-speeds as at normal.

To start with they chose an 110-volt Universal (AC or DC) series wound motor capable of 12,000 r.p.m., or 200 r.p.s. The rotor was set in ball-bearings and connected directly to the camera. A tachometer is copled to the rotor shaft with a gear drive and is calibrated in TIMES NORMAL, FRAMES/SEC. and FEET/MIN. A buckle switch is built on this mounting plate and connects with the built-in camera trip. The whole device is constructed in a dust-

(Concluded on Opposite Page)

APPLAUSE FOR THE NEWS LENS MEN

(Continued from Page 7)

Today's news photographer who takes his work seriously is equipped with, not one, but two and sometimes three cameras. First he owns the old reliable Speed Graphic of 4x5 size, with which he does most of his work. Then he has a Graflex for special sports and similar work where the reflecting principle makes things easier. And finally, then, there is the miniature camera, fitted with high speed lenses, which sees service mainly in strictly candid assignments such as in courtrooms, cafes, night clubs, theatres, etc.

The news picture game is a hard one, but like the stage, there is something about it that gets into the blood, and once a man tastes the life, he is forever after wedded to it. To youngsters who aspire to enter the profession in the future I would say that their first task is to become completely proficient in photography. This means knowing the manipulation of the camera thoroughly and sub-consciously.

Next, they should make a serious study of the newspapers with particular reference to the illustrations used. These will give the key as to what the papers use—and why. The youngsters should duplicate, as far as possible, the technique evidenced in such news pictures as they can. It will be often noted that news photographs are not always pictorial, or even correct with regard to composition. There is a reason for this, of course, and for the sake of speed, difficulties or news angles, such attempts at artistic thought cannot very well be attended to.

Yes, news photography calls for quite a different technique and the newspaper is the best place to

seek information on the matter. Excellent practice is gained by engaging in free-lance news photography—the making of pictures for newspapers and magazines on a free-lance basis. This is profitable—for those who understand what is needed and go after the work intelligently.



Something new for press photographers—an attachable focusing range finder for Speed Graphic cameras. Courtesy Kalart Co.

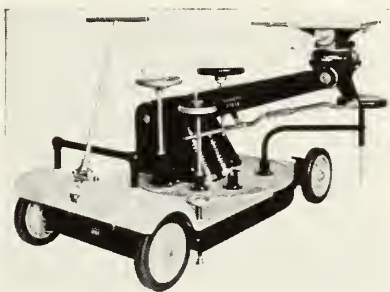
In any event, the news photographer has taken it lying down too long. It is time he is accorded some little recognition, so the next time you pick up your paper, won't you give a thought to the men who made the illustrations possible?

(Continued from Page 24)

proof housing with the gears running in grease.

The speed is varied with a rheostat in series with the motor. The correct resistance for the speed ranges of the motor was measured and the proper rheostat was selected with the help of Mr. Enzo Martinelli, Assistant Cameraman and California Technology alumnus. Under the present arrangement, the camera will run vibrationless and without fluctuation with a full load at any speed between 24 and 192 frames/sec. The hi-speed camera now takes its place with the normal speed camera for simplicity and ease of operation.

Messrs. Oster and Durst deserve no little credit for their splendid contribution of cinemechanics, but they would be the last ones to claim it.



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BIPACK PHOTOGRAPHY

By HOWARD C. BROWN



MORE than ten years ago when the late E. J. Wall was preparing his now famous books on color photography, he made the following statement: "If color rendering of any particular object is not quite correct the audience has no criterion, in the absence of the original, whereby to judge this, hence there is considerable latitude in the result."

Mr. Wall went on further to say: "That the results obtainable by a two-color process can never be theoretically correct is unquestionable; but such pictures, when examined by artificial light, are so satisfactory as to delude even experts."

From the foregoing, it is apparent that ten years ago the quality of two-color photography was quite satisfactory, even though at that time the present characteristics of high speed color sensitive emulsions were not available.

Color sensitivity of the emulsion is only one of the many contributing factors to the success of a color picture, and if Mr. Wall was writing his books today there is no question but what in his reference to two-color photography he would find it necessary to write most effusively.

Practically all so-called two-color photography that is being done today is made on a bipack combination of negatives originated by the Du Pont Film Mfg. Corp. and sold under their trade name of "Dupac."

The front negative has a blue-green sensitive emulsion and is exposed through the celluloid. Filtering means are interposed between the two negatives so that the rear film records only the orange-red values in the subject material.

Early attempts to produce a front negative which would contain the necessary filtering material were along lines of incorporating filtering dyes in the emulsion layer or of staining the surface of the emulsion with dyes which had limited penetration characteristics.

Both methods had serious disadvantages. In the former, the dye lowered the speed and contrast of the emulsion excessively; in the latter, the dye penetrated the emulsion unevenly, which caused bad color fluctuations and also greatly reduced the film's speed and latitude.

Convinced of the practical possibilities of the bipack system of photography, Dr. V. B. Sease, Research Director for Du Pont, and Hollis W. Moyse, then on the Du Pont research staff, set about early in 1928 to develop a front negative which would have unimpaired photographic properties plus a filtering medium which would be uniform in its transmission, not only throughout the length of one roll but through full emulsions.

After innumerable experiments, a procedure was worked out wherein gelatin was prepared containing filtering dye in an insoluble form and then coated over the surface of the active layer. No penetration of dye into the active layer occurred, and the finished filter had the same high degree of uniformity as the photographic layer of cine-negative materials. The photographic qualities of the underlying emulsion were practically unaffected by the overcoating.

The resulting glossy surface of the front negative

was found to be beneficial to the sharpness of the rear image, as the contact between the films was better than with the normal matte surface of ordinary negative materials.

The thickness of the filtering layer is of the order of one-tenth thousandth of an inch and introduces no appreciable loss of sharpness due to its separation of the active layers.

There has been continuous improvement in Dupac from its initial appearance up to the present time. The green sensitivity of the front negative and the red sensitivity of the rear negative are many fold greater with the present Dupac than they were with the original product.

This film is marketed in the form of paired rolls. This is to assure the cinematographer of the utmost similarity in the physical properties of the two negatives. Behind the pairing of the rolls lie such precautions as using celluloid of identical shrinkage characteristics for both negatives, and of perforating them on the same perforator so as to get the maximum similarity in their perforations. These precautions have done much to reduce registration difficulties to a minimum.

From the foregoing, it would seem that the motion picture cinematographer has available a bipack film highly perfected for the making of color separation negatives. Unfortunately, the improvement in the use of this film has not kept pace with its increasing perfection.

During the last six months, the writer has personally examined over 200 bipack negatives made by many photographers on a variety of cameras. Only about 20 per cent of the negatives thus inspected could truthfully be considered first class.

Many and varied were the faults and in all fairness to the photographer it must be stated that the majority of the imperfections were, perhaps, beyond his personal control.

The negative defects, insofar as the printing quality is concerned, and in the order of their magnitude are as follows: Lack of register, lack of sharpness in the rear negative, development, and exposure.

Registration is strictly a mechanical defect and is caused usually by a camera that requires mechanical adjustments to the film gate. Frequently the pins are worn and therefore do not fit the perforations accurately. Many photographers using one camera are switching back and forth from bipack to black and white. While a camera that is not running precisely may deliver excellent black and white, in all probability the bipack will be out of register with possible negative punching. Before shooting bipack it is highly advantageous to take the camera and have it tested for register.

It is in regard to poor definition in the rear negative that the greatest variance appears. The rear film is used in the printing of the blue-green record and as this impression gives the "drawing" to the picture it is easy to see how important it is that this rear film should be as sharp as possible.

When the camera is faultlessly focused and operating perfectly there will be a slight amount of softness in the rear element which is the result of the diffusion caused by the front film. However,

in viewing the rear negative for sharpness one discovers that the negative turned in by various cameras and cameramen vary as much as 20 to 50 per cent from a normal rear negative. The average photographer who notices this lack of definition frequently blames the condition to the pressure plate.

Generally, when using a Mitchell camera, the photographer makes but few alterations when adapting his camera for bipack work. These transformations consist of the replacing of a two-roller pressure plate with a four-roller pressure plate, and the insertion of a slide in front of the ground glass, in order to compensate for the extra thickness of the film. A special marking is then put on to the lens barrel to be used as a calibration point for color.

There are also a few supplementary improvements that some photographers have made to a Mitchell outfit that will increase its workability for bipack. Because double rolls of film are needed it has been found advisable to enlarge the size of the take-up pulleys on the magazine. One of the new non-stretchable belts should be used and the center drive wheel on the magazine extended until it will take a regular 1000 foot belt.

If the above additions have been made on the camera, the cinematographer feels that it is equipped for bipack. In this respect he is frequently mistaken.

Merely adding a new pressure plate does not actually mean that there will be the correct pressure to bring the two films into optical contact, or that air has been eliminated from between the two films. Not does it necessarily mean that the ground glass

in its new position is in the exact plane that is required for perfect focus.

If a new camera were being used these changes might be all that were compulsory from the mechanical angle, but with most cameras having had considerable wear they should be mechanically inspected, for a variance of a very small fraction of an inch will definitely affect the sharpness of the rear negative. Some of this lack of definition can be traced much farther than the mechanical operation of the camera.

With the introduction a few years ago of the increased color sensitive emulsions, the lens manufacturers altered the chromatic value of their lenses to meet the demands of this new film. As the emulsion was extremely fast in the red end of the spectrum, it was essential that the lenses used with this type of film should bring both the blue and red beams to an identical focus.

Prior to this new color sensitive film, and back to the days of orthochromatic emulsions, lenses were constructed to bring the blue and green beams to a common focus and the red beam was allowed to tail off.

Therefore, and speaking generally, we find that during the last twenty years most of the lenses manufactured can be chromatically listed in two classes: The first, or old type lens that focused the blue-green beams, and the second or modern lens that focused the blue-red range.

The average camera today is still equipped with the old type lenses, which are called chromatically correct, and for the purpose originally intended they are, but for bipack photography they are not.

In using a lens that focuses only the blue-green

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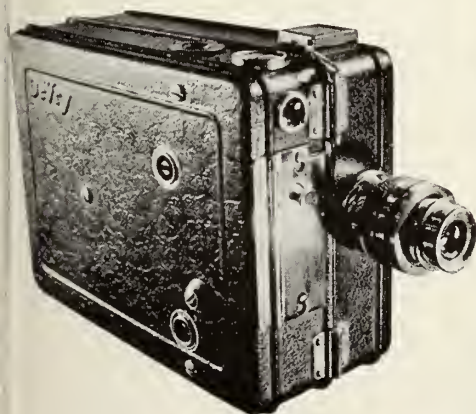
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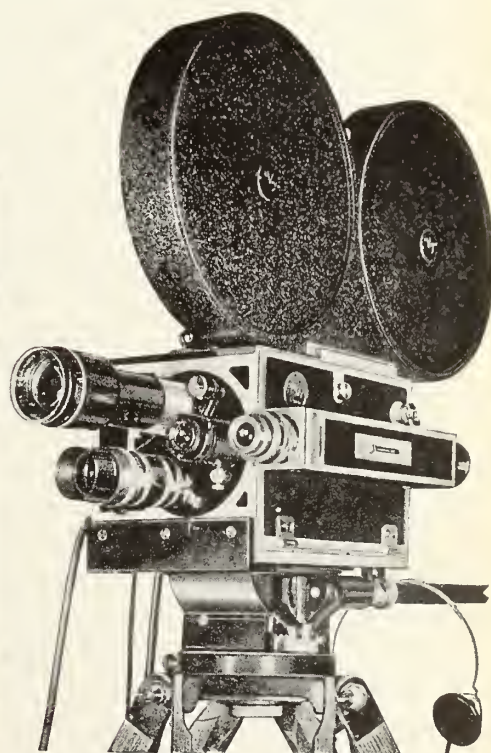
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range what happens to the red beam that is so all-important in bipack photography? In all probability it will be found that there is a secondary image caused by the chromatic aberration of the lens.

The modern lenses practically eliminate this situation, providing the two films are mechanically kept in optical contact, and if this is done, the chromatic correction of the lens helps to compensate for the loss of definition in the rear negative.

So it is important before starting a bipack production to ascertain the chromatic correction of the lenses. Once this is done and accurate lenses are chosen the next step should be to correlate their calibration directly with the new position of the ground glass and the film plane.

With a camera perfectly adjusted for bipack the photographer should then give considerable thought to the development of his negatives. As the developed negatives are to be used for the making of color prints, there should be close cooperation between the photographer and the laboratory.

In Hollywood, the Cinecolor Laboratory are specialists in the development of bipack film. With the result of years of color work and close cooperation with the photographer, they are able to bring out the full color range. Many laboratories develop bipack negatives as a side line because this color film represents only a small portion of their total volume of work and as a result they are not in a position nor are they always desirous of giving the development the attention it requires. Some of them try to balance the density of the two negatives rather than develop to a definite gamma. And even if they do develop to a specified gamma it may be too high or too low. A specialized laboratory is best qualified for the development of color negative.

A great many so-called experts claim that the quantity of light must be greatly increased for bipack photography. This is an erroneous and misleading statement. No two black and white photographers use the same amount of illumination and the variance between the photographer using low key lighting and another flooding the set is as much as 300 per cent. The only true comparison that can be made with regard to the amount of light required for bipack is entirely dependent upon each individual photographer and no general percentage of increase or decrease can be set.

The present Dupac film gives well balanced negatives under normal studio lighting conditions. Used on exteriors, the front negative is slightly faster than the rear, but the majority of cameramen find it unnecessary to employ filters. If it is desired to use filters for density balancing purposes, those which cut in the ultra violet and extreme visible violet are most useful since they have the least effect on the color rendering of the subject material.

As correct exposure is a necessity in order to obtain the full color value the photographer should consult some technical adviser such as Mr. Alan Gundelfinger of Cinecolor, who has spent several years in studying the relation between exposure and development as it affects the bipack negative. With his assistance the photographer can calculate the amount of exposure required for his (the photographer's) type of lighting in order to obtain the correct gamma of development. The Cinecolor organization maintains this gratis technical information for those interested in the production of pictures in color.

With the right exposure determined there are but

a few additional precautions to be taken while shooting.

Make-up, of course, should be used and although the appearance of flesh tints is fortunately much easier to control in bipack photography than in three color work, advantage should be taken of Max Factor's new special Cinecolor make-up. However, much depends upon the amount of light used by the photographer. In this regard it is important that there should be no hot spots, as they burn out the color and are likely to cause bad halation on the film.

From the photographer's angle there is nothing complicated or intricate in connection with bipack photography, providing that an intelligent approach is undertaken and providing also that use is made of the technical assistance which is available.

If this is done, and if the cinematographer insists that his camera be correctly adjusted optically and mechanically for bipack work, we shall then see upon the screen a moderately priced color effort that will delight in both quality of color and definition.

INTRODUCING DUNNINGCOLOR

(Continued from Page 10)

it to average about 65%, which seems to be about the minimum for any successful color work.

The two negatives are developed quite normally, in any good black-and-white laboratory.


The color-prints are made on standard Eastman positive film: On standard black-and-white single-coated stock, not on duplitized (double-coated) film. This is done by a special process in which the two color-images are literally intermingled. The two negatives are both perfectly sharp. Their respective prints are not only sharp, but both lie in the same plane. Consequently, the resulting color picture is critically sharp on the screen.

So much for the technicalities of the process. How about the dollars-and-cents angle: is it still a polite Jesse James proposition?

In the first place, the actual shooting costs scarcely more than black-and-white. The costs of film, cameras and cameramen are pegged closely to established black-and-white standards; of course, where in black-and-white the camera would be loaded with one thousand-foot roll, in this it must be loaded with two. But the differential is negligible when compared to the cost of any production. It would be a misstatement to say the cost of shooting Dunningcolor was identical with that of monochrome, but it is as nearly so as any color has yet come.

Up to this point, the producer has paid a bit extra


(Turn to Page 30)




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"SHOOTING AT FIVE PAST TWO"*(Continued from Page 17)*

at the same time move into different locations and set-ups. One false step without looking in all four directions would probably spell accident. It must be remembered that the children are all over the nursery floor tinkering with one thing or another. For that reason we always place our "A" battery on the outside veranda as a safeguard. The cable is brought in through an opening in the window. We never clutter up the room with unnecessary equipment, due to the limited space in the nursery. It's great fun to shoot these five little charges, who have attracted countless thousands from all parts of the world to view them daily.

I use a Western Electric single system newsreel camera for all my sound shots, seldom working without a "blimp." All the cut-in shots are made with a 170° hand-cranked Bell & Howell and an Eyemo. Our lighting equipment consists of four Mole-Richardson "Cinelites" mounted on the standard tripod with rubber casters, using No. 4 Photoflood bulb. This light of course is too intense for the babies' eyes, since these No. 4 Photoflood bulbs are approximately two and one-half times as strong as a standard 1,000-watt globe, so we screen them with No. 52 Cinema Daylight blue translucent gelatine diffusers; we also silk them in order to avoid glare.

Our greatest difficulty is to keep the children all into focus. It is a common occurrence to see one of the children come as close into the camera as three feet, while the others in a group are doing something at 20 feet away. I sometimes build a barricade in front of the camera just outside the picture lines in order to keep them far enough back and in focus. Oftentimes I use cribs for this purpose.

The children's nursery where most of the interior shots are made is a room measuring approximately 20 by 17 feet. That is why we are compelled to use compact lighting equipment. The walls are light-colored cream and there are windows around two sides of the room. On sunny days I usually draw some of the window blinds in order to balance my light. It is possible to make pictures inside the nursery on bright days without the assistance of artificial light, provided I use a fast emulsion and a wide aperture. I always avoid using long focus lenses when making my shots in the nursery. In most cases the lights are turned on before the children are brought in on the set; by so doing the babies least notice them.

I never make a habit of smothering these dark-haired, blue-eyed youngsters with excessive light. They seem to perform with better expressions when top light is applied, since they least notice the glare. Whenever possible, I try to light the children as best suited to them. Now, take Marie, for instance. She looks her best with a flat light, while Annette takes a semi-back light. Not always can you adjust your lights as you want them.

No artificial eyelashes or makeup is needed for these miracle babies, since their olive complexion is free from any imperfections. Very often everything is set—camera, lights, sound—when all of a sudden without the least bit of warning they walk away from the camera and leave us flat. We try to coax them back with a toy; sometimes it works and sometimes it doesn't.

They take a particular interest in the microphone. Unfortunately, we have to use a tripod, since a boom would be useless in their outdoor playground, which measures approximately 90 by 50 feet. They're all

over the place. Dex Harrison, my sound man, has plenty to worry about; his gain is usually kept rather high in order that he may get all natural sounds made by the babies. We would say that the average yell made by the babies runs over 2,000 cycles, so you can readily see just what we are up against. Very often one of the children will knock at the "mike" with her chubby hands, causing the ribbons to break. All the baby sounds are judged by ear-phone, since galvanometer reading would be out of the question.

As time marches on, I am confident that these normal, healthy five "wonders of the world," the offspring of 32-year-old Oliva Dionne and his 27-year-old stout, shy, pretty-faced wife, Elzire, will survive due to the capable attention of Dr. Allan R. Dafoe, their physician, to whom all credit is due.

"TAU HERE ITI"

After living in the South Seas for many years and knowing the natives and the islands so intimately, I feel there is not a more beautiful title in all the languages of the world than the one selected for my first South Sea book, "Tau Here Iti." It means sweethearts in the South Seas. To the Polynesian it means a good and beautiful sweetheart and to pronounce it like the natives do we would have to spell it "Ta-oo har-ri e-te." So it is "Tau Here Iti" to me for no other title would fit.

Tutu, the girl, lived on the beautiful island of Bora Bora, a small high peaked verdure covered island which rises to the clouds like a great jewel from the center of a colorful lagoon and an encircling snow white coral reef where untiring ceaseless waves crash and tumble.

In the book, it was here that in 1856, a small boatload of my imaginary characters who love and laugh and fight and hate, survivors from the wrecked clipper ship "Norbert K." worked their way through the opening in the foaming reef to what destiny had in store for them.

Subscriptions are now being received for the first limited autographed edition of "Tau Here Iti" illustrated profusely with my pen and with my own beautiful pictures.

My publishers, Murray & Gee, will act as custodians of all subscriptions received, and by arrangement with them, when 500 subscriptions are received the book will be printed and distributed. Numbers are being assigned in order of receipt of subscriptions so send in your check or money order right away, if you want a low number, payable to Murray & Gee, 320 Crocker Street, Los Angeles, California.

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INTRODUCING DUNNINGCOLOR

(Continued from Page 28)

for color, but he has not lost his established black-and-white value, for he has a perfectly commercial black-and-white picture. The rushes are printed in black-and-white, from the red-filter negative. This gives a print that look about like standard black-and-white shot through a filter a little lighter than a 23-A. This correction is a shade heavier than normal, but not enough overcorrected to distort skin tones, and the like.

Now if the producer doesn't want to gamble with color, he doesn't have to. He can make perfectly commercial black-and-white prints from this negative and release them.

If, on the other hand, he wants to try color, he can have the blue-filter negative cut, and make as many color prints as he wants; he can issue all of his releases in color, or part in color and part in black-and-white. He can make his domestic release in color, and his foreign release in black-and-white. Or, through the George Humphries Laboratory in England, which is affiliated with Dunning, he can make all or part of his foreign release in color. The same idea, too, works for the foreign producer, who can use a Dunning camera from the Humphries plant, with identical color-printing abroad or in Hollywood.

From this viewpoint, the process certainly seems practical; but what appeals even more strongly to me, as a practical cameraman, is the way it stands up under actual production. There's no useless mummery about it. The first Dunningcolor picture I photographed—a four-reel feature for the California State Highway Department—was made under conditions that would keep a black-and-white unit plenty busy. We covered 11,000 miles on the state highway system, never getting farther from the road than our battery-cables could stretch. We shuttled up and down and across the state at high speed, on a schedule as closely figured as that of a limited train. We had no time to play around with the mysteries of color: We get our scene the first take or not at all. And we came back with a real picture!

When we started that job, the camera had been finished exactly three days. We shot our tests, and then started chasing scenery. A few weeks later, we had put nearly 30,000 feet of film through that camera, under every possible condition (most of them unfavorable). In all that time we had but three buckles, all of which came in one day and were caused by a defective pulley, which was easily replaced. Aside from those three shots, we had no retakes, and not a single scratch. The filter-balance control worked perfectly; in fact it saved us several times when we had to work under light conditions that would be bad even for black-and-white. In other words, both the camera and the process stood up under a thumping no less severe than they would get making the quickest sort of a quickie—and they kept on delivering good color through it all.

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John Herrmann was recently rewarded for his

heroism and efficiency by being voted the Congressional Medal and was also voted the honors of Fellow of the Royal Photographic Society of Great Britain, the first honors of the kind conferred upon newsreelers and no man ever merited them more greatly than this upstanding American knight of the motion camera.

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By
**Robert
Tobey**

HOLLYWOOD HONEYMOON or The Loves of Lili Liverblossom By R. THRITIS

NOTE: Censorship reared its ugly head just as we were coming to some of the most interesting chapters of our tale of movie intrigue. With a strict ban on the printing of Chapters XXIV, XXI and XXVI, your editors worked feverishly to find a way out of the strangling grasp of the censor octopus, and the results of their efforts are presented herewith. We have succeeded in having the next three chapters of this exciting story translated into German, and we present the next chapter in that language in order to elude the censors, as no censor is able to understand two languages. If you don't understand German yourself, an interpreter is supplied on request. Gesundheit!

Chapter XXVII

BREAKFAST FOR ONE FOR TWO

As the ghost slipped noiselessly through the door of Lili's bedroom closet, Perri, alone in the room now with La Liverblossom, turned grimly toward the famous star.

"I don't think it's very good policy," he said, "to have a ghost alone with you in your bedroom."

"That's a lot of crepe," answered Lili. "He has to sleep somewhere, and after the help he's been to us, we can't turn him out now. You're not going to be jealous of a ghost, are you?" she finished haughtily.

Then, penitent, she added, "You're much handsomer than Potty, you know."

Perri walked over to where she was sitting and kissed her on the edge of the bed.

"Now, go home like a good boy," pleaded Lili. "I'm perfectly safe. The ghost can't do a thing to me," she said in her \$5,000-a-week contralto. There was a note of regret in it.

As the door of her apartment clicked shut on Perriwether Murgle, Lili stretched luxuriously back on the special over-size pillows on her special bed. Sleep came late upon Lili Liverblossom that night—late, and reluctantly.

The sun was well up when Lili awoke the next morning. This was mostly because it was 10:30 A.M. Lili stretched her slender arms and rubbed the sleep from her lovely eyes. Her dark brown silk pajamas were in disarray, and had fallen away from her swanlike throat and the warm, bare, creamy shoulders above her milky arms. Cream is always on top.

Lili looked around the room, and was amazed to see breakfast waiting beside her bed. The table was her own, but beyond that nothing was familiar to her. The silver service she had never seen before—neither had a silversmith. Each piece of cutlery said "C. R." on the handle. Although you could hardly hear it.

"Giblets!" exclaimed Lili. "Where'd this come from? I must have ordered breakfast in my sleep."

"I got it for you," answered a slow, sepulchral voice coming from behind Lili, between her bed and the wall, where there wasn't any space.

Lili looked in the direction of the voice. There was nothing there. The skin on the back of her neck began to crawl, but it was too tired to go far.

"Come, come, Potty," said Lili, trying to be brave, but her voice sounded thin and far away. "Come now, Potty, I know your voice. Where are you?"

"Right here," said the voice, from the very spot where her eyes were focused. "I'm hard to see in daylight, that's all. I knew you were about to wake up, so I got some breakfast for you."

"How did you ever know exactly what I wanted to eat?" exclaimed Lili in amazement, looking over the orange juice, oatmeal, baked apple, ham and eggs, potatoes, griddle cakes and coffee, her usual breakfast.

"I didn't," replied Potty. "It came that way." "You mean it came up here by itself?" asked Lili, to whom anything was possible after what she'd been dreaming.

"No. That was the way it was when the waiter had it."

"The waiter," repeated Lili after him, vaguely.

"Exactly," said Potty. "I took it away from him. The poor fellow jumped ten feet when he saw his tray sailing through the air apparently on its own." The ghost chuckled a sepulchral, reminiscent chuckle.

Lili by this time had set the baked apple in front of her, and was staring thoughtfully at it. To her astonishment the apple stared right back at her, with its one eye where the core had

been, all encrusted with sugar as if it had been asleep.

"You look half-baked," said Lili bitterly, as she bit deeply with her spoon. Cut to the core, the apple gave in.

There was an ominous knock at the door. (Who is knocking at her door, and what will the fair maiden do, with a ghost within and godnosewhat without? Stick with us, and you'll find out.)

KNEECAP REVIEWS

(No space left on my thumb-nails)

"DODSWORTH," directed by William Wyler, and with a superb cast headed by Walter Huston, Ruth Chatterton, Mary Astor, Paul Lukas and David Niven. This Samuel Goldwyn presentation of the Sinclair Lewis novel holds promise of being a box-office smash, and in addition is an artistic triumph—a combination too seldom wed in the motion picture industry.

Walter Huston gives the greatest performance of his career—it is one of the most genuine characterizations ever to be immortalized on celluloid. His very fibre is the fibre of the soul of Dodsworth, eminent and forthright American automobile manufacturer. Ruth Chatterton, as his wife who is ever in fear of advancing old age, lets you see into the very soul of a shallow, selfish neurotic willing to cast everything to the winds to stay the hands of Time for a little while.

Mary Astor, with none too fat a role, steps into a highlight of her career. In a part that could easily have been made sappy, she fashions a person of winning comprehension and sympathy. It was interesting to observe, on the occasion of the "Dodsworth" preview, that Miss Astor received more applause than anyone else in the cast—applause that lasted all through her first scene.

The rest of the cast deserves equal commendation. Each part is meticulously delineated and fits into the whole like a fine piece of mosaic. Paul Lukas, David Niven, Gregory Gaye, Maria Ouspenskaya, Spring Byington, Harlan Briggs, Kathryn Marlowe, and John Payne are among these players.

Splendid direction by William Wyler is, of course, a tremendous factor in unity of tempo and performance.

Photography by Rudolph Mate and mounting of the picture are in keeping with the high quality of the production. Sets and locales were constructed or selected with consummate artistry.

"GIRLS' DORMITORY," starring Ruth Chatterton and Herbert Marshall, both of which are pronounced Simone Simon. This story of one man's problem—the story of his choice between the girl he loves and the women he should have—is partly a sympathetic and understanding tale of the problems in a girls' school, but mostly an unashamed and tender love story. It suffered from severe treatment during parturition—the distortion attendant on its forced change from a vehicle for Chatterton and Marshall to a builder-upper for Simone—and from sporadic minor outbursts of mediocre cutting. These detract little from its general splendid qualities.

The little Simone is a fresh and saucy addition to our screen ingenues. Ruth Chatterton and "Bart" Marshall deliver the fine performances of which they are singularly capable. There are noteworthy contributions by J. Edward Bromberg, Constance Collier, and Dixie Dunbar.

Direction by Irving Cummings, while not the best of which this director is capable, is understanding and commendable. Camera work by Merritt Gerstad is good.

"THE MAGNIFICENT BRUTE," starring the magnificent brute, Victor McLaglen. If you want large doses of brute strength, steel-mill sweat and laughter, and Love-in-the-Raw as much as it can be without sex rearing its ugly head—step right up, here it is. Though a little too melodramatic for your reviewer's tastes, it has plenty of merit once the slow start is digested. As soon as McLaglen enters the picture, it moves right along. Binnie Barnes and Jean Dixon, while struggling manfully, nevertheless cannot quite drop themselves to the level of the parts they have to play. William Hall, a bit crusty in his first big part, gives rare promise. Billy Burrud does well with a hero-worshipping youngster role.

Direction is by John Blystone and photography by Merritt Gerstad.

"THE GIRL ON THE FRONT PAGE." This may or may not have that authentic newspaper touch—let the rags fight that out among themselves—but it's one swell story. With no pretensions as to top class, this ranks with the biggies.

Its interest lies not so much in the story as in the charm of the telling, so suffice it to say that Edmund Lowe and Gloria Stuart are as good as they're cracked up to be as the hard-boiled city editor who won't work for any "nit-wit female"—and his unwitting boss. A gang of blackmailing servants headed by Reginald Owen provide the menace and the abundant comedy. Harry Beaumont has directed with a sparkling touch, and photography by Milton Krasner is above par.

"THE GAY DESPERADO." Here is a four-star, top-notch, Class A-1 piece of entertainment. Starting off with an excellent and refreshingly different story, it holds its merit down through direction, cast, photography, and all phases of production. Leo Carrillo, playing the part of a Mexican Robin Hood who comes under the influence of American gangster methods and slang, walks away with the picture under his arm. He makes his farcical role abound with real comedy and action. Nino Martini, presumably the star of the piece, is much better than in his previous film effort, but still has a hot potato in his mouth when he tries to deliver punchy dialogue. Time should take care of that. Ida Lupino is quite lovely as the gal whom all the furse is about. Harold Huber in the part of Carrillo's bandit lieutenant merits a cheer (where's he been?) Mischa Auer has never had a better part and rates a laugh for every appearance. I know where's he's been—hidden out in a hundred minor roles, waiting for someone to realize his talents. James Blakely does well with a thankless part.

Rouben Mamoulian has wrung the utmost from his cast with his superb direction. Photography by Lucien Andriot was on a par with the merit of the production—superb.

COOKERY DEPT.

OUT OF THE FIRE

Richard Tucker and wife.

HOLLYWOODCUTS, by The Shovel Boys (they dig the dirt) . . . So that the name of Anita Stewart shall never die, there is now an Anita Stewart Photo Publishing Company run by the lovely Anita and her husband, George Converse. They print snapshot albums of your favorite fans, and sell 'em all over the country. . . . If you think Robert Taylor isn't popular, just ask George Converse. They sell more albums containing Bob Taylor pictures than any of the others. . . . And just in case you think Hollywood is immune to the star craze, George will tell you that Woolworth's store sold 2,630 Bob Taylor albums in one month—more than anywhere else in the country. . . . Clark Gable is still holding his own, and Fred MacMurray is well in the money in the Popularity Stakes. . . .

The marriage last month of Evangeline Russell and Commodore J. Stuart Blackton united two of the pioneer families of filmdom. The bride's father is John Lowell, quondam cowboy star, and her mother L. Case Russell, famous as a writer and first woman motion picture director. The Rev. Neal Dodd officiated at the wedding, and among the bridesmaids were Jane Novak, Minta Durfee Arbuckle, Agnes Ayres, and Violet Donnelly Russell. . . . A bunch of movie celebs chartered a bus for a dual-purpose trip to Pomona—to see the County Fair and to have publicity pictures made. Among those on the trip were Glenda Farrell, Charles Quigley, Inez Courtney, Tom Brown, Barbara Pepper, Eddie Adams, Victor Kilian, Douglas Fowley, Jacqueline Wells, and Mr. and Mrs. Donald Woods. The weather was so bad that practically no pictures were made. Anyway, Tom Brown and Barbara Pepper struck up an acquaintance, so maybe the trip wasn't all lost. . . . Buck Jones and his wife and Victor McLaglen watching Jack Palmer do amazing card tricks by the hour. And can he do 'em! . . . Ask Cesar Romero what he did with his forty-one trout. Then run, do not walk, to the nearest exit. . . . The Racquet Club in Palm Springs opened last month and is twice as big this year. Tennis is the thing, all right. . . .

The Pacific Southwest Tennis Tournaments drew a bigger number of the movie elite this year than ever before. . . . Clark Gable and Carole Lombard were in attendance practically every day. . . . Connie Bennett entertained the Maharajah and Maharanee of Indore, both tennis enthusiasts. . . . Tennis is the only sport that brings out Fred Astaire, Myrna Loy, or Ginger Rogers. All three were there this year. . . . Willie Wyler alternated entertaining him Travis and Simone Simon in his box—and the day of the finals brought both! . . . And Bob Taylor attended two days. Alone. . . .

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"MOTION PICTURE LABORATORY PRACTICE"

INTERNATIONAL PHOTOGRAPHER

HOLLYWOOD

TH YEAR

DECEMBER, 1936

VOL. 8
No. 11



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A beautiful shot by Art Marion, Local 659, I.A.T.S.E. and M.P.M.O., away on location with the celebrated Buck Jones, at Lone Pine. The Mount Whitney range is in the background. Lita Chevret, leading lady in "Sand Flow," with Buck Jones.

INTERNATIONAL PHOTOGRAPHER

MOTION PICTURE ARTS AND CRAFTS

VOL. 8

HOLLYWOOD, DECEMBER, 1936

No. 11

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A Monthly Publication Dedicated to the Advancement of Cinematography in All Its Branches; Professional and Amateur; Photography; Laboratory and Processing, Film Editing, Sound Recording, Projection, Pictorialists.

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In January, 1937, issue of INTERNATIONAL PHOTOGRAPHER, Associate Editor Earl Theisen will appear in Part One of an authoritative article on "Censorship," a subject of interest not only to the workers in the Motion Picture Industry, but to every individual of the General Public. It is timely and of great import in these days. Read it.

Technical Editor Fred Westerberg will return in January to INTERNATIONAL PHOTOGRAPHER with additional Cinematographer's Tables and a Second Edition may very soon be announced. Mr. Westerberg since retiring from his cinematographic work in Hollywood has devoted his time to the development of color in Graphic Art.

Bob Tobey, of the Cinematographic Department of Columbia Studios, and who for three years has conducted the "Cinemacaroni" feature as a gift to Local 659, has retired in order that he may devote all his time to his work. During this time Mr. Tobey developed a fine talent for cinematic review and created an unusual comedy character named, "The Ghost," who is likely to make him famous some day. The staff of INTERNATIONAL PHOTOGRAPHER and his host of friends, while regretting Mr. Tobey's departure wish for him and his unlimited prosperity and happiness.



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TAKING THE BUNK OUT OF AFRICA

Cameramen Who Are Planning Journeys To The Dark Continent Please Take Notice.

By HAL HALL

THE writer has just looked at six reels of film made in the jungles of Africa by a retired insurance executive whose chief hobby is picture making. Would that every cameraman and every producer in this Hollywood of ours might see those reels. The cameraman to see what can be secured by a man unhampered by stories, scripts and location hunting experts; the producers TO SEE WHAT AFRICA LOOKS LIKE and what the animals REALLY do over there in that badly libeled country.

Perhaps producers might be amazed to see three lions feasting off the same dead carcass as peacefully as three lambs nibbling grass in a quiet meadow in Western New York state. No fighting. No tearing each other into bloody, revolting messes. No hokum. Thrills? Yes! Five natives playing with a flock of hooded cobras, mambas and other venomous reptiles. A cobra sneaking up on one of the natives; sinking his fangs in the black fellow's leg. And the native merely reaching down and brushing the snake off as though he were a pesky fly.

Perhaps before going further it would be well to say that the man who made this film is Harry C. Pearson, of Chicago, and Los Angeles. But, while giving credit, we must also mention Mrs. Pearson, five feet of loveliness and courage who accompanied her husband on the seven months' stay in the jungle; her husband's only assistant and his bodyguard as

well, standing guard with a rifle as he photographed animals that might decide at any moment to take exception to visitors.

The Pearson film, titled "An African Holiday," will probably catapult Mr. and Mrs. Pearson into as much fame as that enjoyed by the Martin Johnsons. Already, and not a studio executive has been permitted to see it, the Pearson name is being tossed about in practically every studio. Pearson, we can truthfully say, is a type of man new to Hollywood and the film industry. Whereas most people with a motion picture fall over themselves in their haste to show it at the studios, Pearson has steadfastly refused for months to show his.

Studio executives cannot understand him. They do not know that he is both wealthy and an idealist; that he bristles like an angry dog when he sees so-called African pictures in which "thrills" that have been made in America have been inserted. He loves Africa and he is a stickler for authenticity and honesty.

"You see," explains Pearson, "we did not shoot this picture as a commercial venture. Mrs. Pearson and I had been hunting in Africa and had made 16-millimeter pictures on that trip. We were not satisfied with them, so we decided to go back and have a grand time and make pictures that would really show Africa as we had found it. We purchased Bell & Howell 35 millimeter equipment, two Eyemos,



Upper Left: Tribe of African Giants, seven feet and over, nude. Upper Center: Members Snake Brotherhood doing their stuff. Upper Right: One of thousands of beauty spots. Lower Left: Mr. and Mrs. Pearson framed in elephant tusks, secured by their marksmanship. Lower Right: Quiet day at home for flock of hippos. Lower Center: Sad and lonely rogue elephant, doomed, on account of his ugly disposition, to flock by himself.

one fitted with external magazines and a battery-operated motor. We took the lenses we thought we needed. We took a Harrison color unit and we took a Leica and a Graflex, also two photo-electric exposure meters—absolutely necessary over in that country.

"All set with our photographic equipment, we decided to make a film of Africa as it is. I very frankly am fed up on the fake scenes one sees in practically every African picture. The thrill things of the ordinary commercial film just do not happen in Africa. But there are so many things never found or photographed that we believed we could get an interesting film document that would be packed with the unusual; that would remind us in future years of our holiday in the jungles.

"Well, when we finally returned and some of our friends in Hollywood had seen the rough cut they told us we had a **real** picture. So now we are having a music background recorded and a narrative spoken and the picture will be in six reels, with about three hundred feet in natural color; the first I believe that has been made in East Africa. Now I expect to release the film through one of the better film companies. But I will not let anyone see it until I feel it is completely ready.

"Instead of depending upon hokum scenes in which lions tear up the black boys or tear each other—none of which ever happens in Africa—we will show things never photographed before. For example, a ceremonial of the famous snake brotherhood. Not a dozen white men have ever seen these strange black fellows gather together cobras, mambas and other reptiles of equally poisonous repute and wind up their ceremonies by rolling on the ground with these snakes, completely immune from the deadly poison as the snakes sink fangs into them at will. We have it in our picture.

"Ever since an animal called the Okapi was discovered in 1901, explorers and naturalists have been trying to photograph it in its native African haunts. I am happy to say that Mrs. Pearson and I are the only people who have been able to do this. We have the record in our film. The Okapi looks like a cross between a giraffe and a zebra.

"Much has been heard of a tribe of giants, no man of which stands less than seven feet in height. After months of effort we were fortunate enough to locate this tribe and made the only photographs of them ever made. They are a strange group, and the men are the only ones in all of Africa who habitually go stark naked.

"Another bit of luck we had was in obtaining photographs of some of Africa's famous wild dogs. If I am not mistaken, we made the only pictures of them ever taken although many, many attempts have been made in the past.

"Luck was again with us when we contacted the pygmies. You see, we never asked any of the members of any tribe to do anything that was not according to their usual custom. In other words, we let them know that we wanted to make pictures of them as they really are. We did not ask them to help us stage any battles between helpless animals. The result was that we were privileged to photograph scenes and peoples never before shot.

"I am bitterly opposed to faking African pictures. I recall one episode in the making of a certain picture of Africa in which a scene was made showing a wild boar and a leopard fighting. It was a terrible thing in my estimation, for a tame leopard was thrown into a compound with a real wild boar. The leopard didn't know how to defend itself. Well, that may be thrill, but I believe the ordinary man wants

Harry C. Pearson and wife, while hunting in Africa, make film which has intrigued Hollywood.



truth and finds it pleasanter."

Pearson is one of those men who was born to be a photographer. He frankly declares he knows nothing about technique or technicalities. But whenever he sets up his camera he seems to find the secret of composition. His wife is also clever both as a camera user and as a huntswoman. She bagged a lion, an elephant, a rhinoceros and seven leopards while with her husband on his seven months trip. She and her husband already are figuring on their next adventure.

It will be to India where they are planning to witness the coronation ceremonies when the King of Great Britain officially becomes crowned Emperor of India. Pearson says he will film that in color. And, while he is willing to let his pictures be released for the screen, he says he will make that as he did "An African Holiday," for the sheer joy of making the picture, and if it is good enough so a film company will want it, why all right. Otherwise, it will join the collection of photographic trophies the Pearsons have gathered together while enjoying their hobby.

NEW COWBOY BALLAD

They'll soon be humming a new cowboy song that Buck Jones says is the most appealing range ballad written in many a year. The tune is called "Sandflow" and was written by Betty Laidlow, with lyrics by Robert Lively, for Jones' latest picture of the same title.

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If and when George Murphy decides to leave Hollywood and the silver screen, he'll find no difficulty in going back to his old job, for the handsome Irish actor now enacting the romantic lead opposite Doris Nolan in Universal's musical production, "Top of the Town," still retains his United Mine Worker's union card.

After being graduated from Yale, Murphy went to work in a Pennsylvania coal mine because he needed money and is still a member in good standing with the coal miners' union.

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PERSPECTIVE

INSTALMENT No. III

By LEWIS W. PHYSIOC

(Continued from November issue)

IN the preceding instalments, we have shown that the essentials of perspective are difficult to establish. These essentials, we have learned, are the two vanishing points, and the measuring points. We have shown, also, how easily these essentials may be secured by this new and simple method.

Further than this we make no claims to originality, and, after having established these essential points, the student may apply the long known and accepted rules, tricks and short cuts in working out the details.

We do claim, however, that being able so easily to establish the fundamentals, the details are proportionately simplified after the fundamentals are correctly established.

It likewise is noticeable that the scenic artist, due to his training on large scale subjects excels in these tricks and short cuts.

It will be remembered that the one troublesome feature is that **second** vanishing point.

To further illustrate this point, we offer the following proposition: We may establish an arbitrary horizon and upon this line mark out an arbitrary vanishing point; and to this point we may run a series of arbitrary vanishing lines. All these lines may represent the construction lines of a building, street, etc. Considered as an independent series, these lines vanish properly, without any question. But the moment we try to establish the lines representing right angles to the first series, it is no longer a matter of arbitrary choice—**there is only one** point on the horizon to which this second series may converge: That point must be scientifically established.

Plate 5 illustrates this problem and is an elaboration of the solution as suggested in Figure 2 (Plate 4) and its accompanying formula.

This problem frequently crops up during the scenic artist's experience. It may be that the sketch furnished by the art department is a hasty suggestion. The scenic artist must furnish the accurate details. The huge drop before him must show a series of city buildings, or the like.

Process:

Establish the horizon—the desired height of eye (or camera). The known height of the horizon furnishes a scale for measurements—in this instance, 10 feet: Consequently the distances between points W, W' and W'' and the horizon represent 10 feet. This scale also may be converted, to establish the desired proportion of the buildings, **according to judg-**

ment. We say **judgment** because we have not been furnished those accurate provisos, as shown in Plates 1, 2 and 3. For instance, if the building suggested is to be a skyscraper, the 10 foot scale may be converted to represent 100 feet.

The one arbitrary vanishing point (we have discussed), may be conveniently located, as shown at VP-F'. The axis, or distance from EYE to E', F-G, may be known or may also be assumed, and furnishes angle A' and angle B'. According to the formula (Figure 2, Plate 4, November issue) either of these angles, together with the distance between F and F' will furnish VP-E (160 feet, 4 inches).

Now comes the difficulty: The scale is so enormous, manipulations are awkward and puzzling, we must resort to the scene painter's tricks. We may construct the problem in reduced scale, using inches instead of feet.

Secure the measurement (in feet) from G' to I. Measure down from I to J, the equivalent of this measurement in inches. Take the equivalent of G and G' and establish g and g'—the reduced scale axis. From g-g' to e'-f is the reduced scale of EYE to E', F, G. The line e'-f is the reduced scale horizon. Points e-e' (in inches) equals VP-E and E' (in feet).

The line extended from I to e gives the proper vanishing inclination, as may be proved by continuing the line to the actual vanishing point VP-E.

By connecting point VP-E and EYE, VP-F' and EYE, we establish the equivalent angles: Angles C-C'; D-D'; A-α; B'-b'; B-G; A'-α'.

So far only two vanishing lines have been secured—I-e and I-f' (VP-F').

Those running to VP-F' are easily secured because of its convenient position, but VP-E, being 160 feet distant is impossible of attainment. Divide both edges of the building (W-W') between the horizon and I, into equal parts, as suggested at 1, 2, 3, 4, 5, 6: or by extending upward the distances between W and horizon—W' and horizon. Thus we get the proper vanishing inclination of the lines

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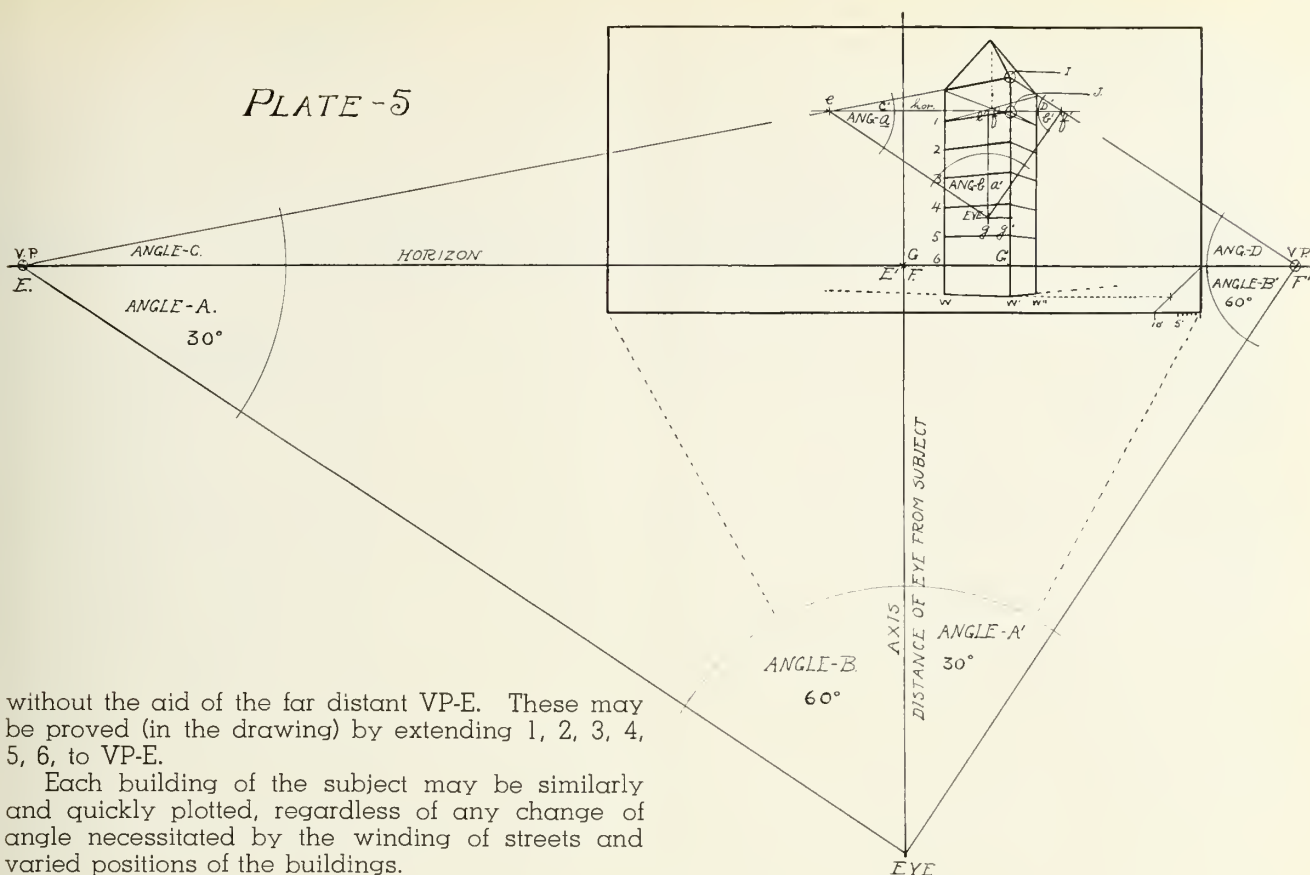
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PLATE - 5



without the aid of the far distant VP-E. These may be proved (in the drawing) by extending 1, 2, 3, 4, 5, 6, to VP-E.

Each building of the subject may be similarly and quickly plotted, regardless of any change of angle necessitated by the winding of streets and varied positions of the buildings.



Up the Ladder With Hal Mohr

Amateur photographer—ace studio cameraman
—and now—director!

Such is the history of a San Francisco lad, Hal Mohr, who recently had the honor of successfully pleasing four feminine hearts, cinematically speaking, while doing the camera work on **Ladies In Love**. Any man who can photograph Simone Simon, Janet Gaynor, Loretta Young and Constance Bennett simultaneously—and not only live to tell the tale, but be flush with compliments from each star—must be good!

"I'm going to prove I can direct pictures better than I can take them," he says enthusiastically. As it is well known in Hollywood that the man who can visualize each scene before it is shot and is able to make any and all sequences interesting through the medium of odd camera angles and lighting effects, is the one who has won half the directorial battle, it seems Hal's statement will be proven when **Class Prophecy** is released.

This Universal assignment which welcomes Hal into the directorial field is not his first venture. At the age of fifteen he built a camera composed of contributions from junk heaps, found to his amazement that it worked and started snapping news events about his home town for Sid Grauman's father to run between stage shows. From that time on he produced pictures, worked in film laboratories,

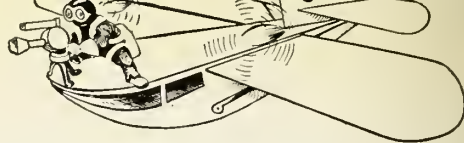
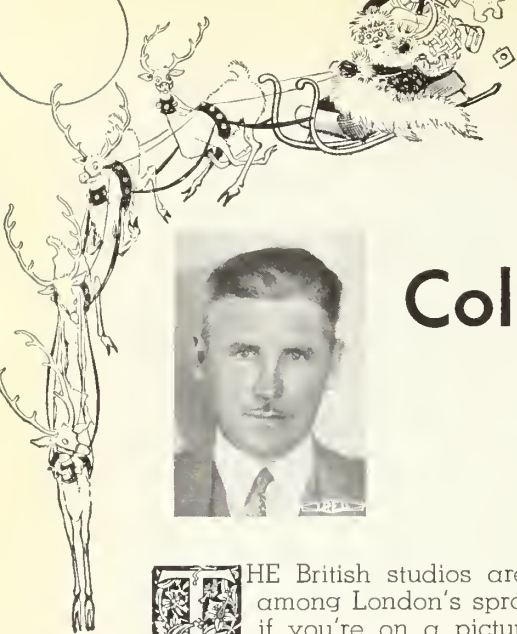
wrote originals, became a cutter ,and directed and filmed such stars as Harold Lloyd, Bebe Daniels, Belle Bennett, Mary Pickford and Douglas Fairbanks.

The secret is that, unfortunately for Hal's aspirations to direct, he became too fine a cameraman. Producers refused to let him direct as they needed him too badly in the camera department. Capable directors are legion in Hollywood while sure-fire cinematographers are at a premium so why, they argued, take a chance on having such films as **"Midsummer Night's Dream," "Captain Blood,"** and **"Green Pastures"** jeopardized photographically?

Hal at present is busy whipping his story material into the final shooting script and testing one actress after another. Usually a new director wants tried and true performers in his cast, but Hal is eagerly searching for new talent. "Might as well start us both out together," he grinned.

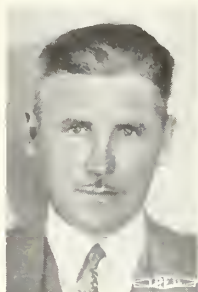
There are many reasons why cameramen make good directors—all the technicalities are an open book to the photographer who has fought his way up to the foremost ranks of this department. However, along with this knowledge the man guiding the stars must have the right executive ability—or he finds himself with a letter perfect picture as to details—but a flop as to box office appeal.

Hal has been fought for by stars, not only because of his photographic ability, but because his human and kindly qualities have brought him many personal friendships with the celebrities. Just as his convincing personality has won the confidence of players placed in his hands to be photographed, so it will win over those who come to be molded into definite screen characterizations.



Colorfilming in a British Studio

By RAY RENNAHAN



THE British studios are so widely scattered among London's sprawled-out suburbs that if you're on a picture in one studio, you have very little opportunity to get around to explore the others. So my remarks must be based on what I actually experienced while photographing Robert Kane's Technicolor production, "Wings of the Morning," which Harold Schuster directed at Alexander Korda's remarkable new plant at Denham. But the American cameramen who have made pictures at the other studios in England agree with me that the outstanding feature of transatlantic picture-making is the genuine friendliness with which the British welcome reputable American technicians. Everyone—from the highest executive down to the gate-man—goes out of his way to cooperate with us, and to show his appreciation of our being there. It is the same in every studio.

British film-production actually dates back to pre-war days, but the modern British film industry is relatively young. Being young, it has all the advantages and disadvantages of youth. Perhaps it has much to learn that experience has made second nature to us; undoubtedly it makes mistakes, even as we do in Hollywood; sometimes it evidences growing-pains. But it has a vigorous, young spirit that is a grand tonic: a determination to learn and to succeed. It is the same youthful enthusiasm we old-timers remember from the days when Hollywood was growing from a sleepy village to the world's film metropolis.

In England, however, there is one tremendous difference: this youthful vigor has the latest and most modern tools to work with. The newer British studios are quite on a par with any in Hollywood; in some cases, their equipment is even newer. England's greatest lack is in experience and trained technicians; but time will supply both, while American help is undoubtedly speeding the process.

The Denham studio, where I worked, by far the most complete and modern studio I have ever seen, was planned and built by Jack Okey, well-known in Hollywood where he was for years an Art Director at Warner Bros. Its location is unique: an old estate bought from the once wealthy family that had owned it for generations. In building the studio, the beauty of the place has been kept intact. The original house—a hunting lodge—houses the top executives. The extensive stables have been remodeled into cutting rooms, shops, and the like. The parked grounds of the estate, through which flows the picturesque river Coine, furnish exterior settings of unusual beauty.

Entering the estate, a curving drive brings you to the main buildings of the studio. You can enter the administration building through any of three large reception halls, all of which are connected by a long

corridor lined with executives' and directors' offices. From the reception rooms, roofed and glass-walled corridors lead across a garden to the equally large dressing-room building, which also houses Art, costume and make-up staffs. Beyond, more covered pathways lead to the row of six big sound-stages. Two of them—the oldest—are only average-sized; but the other four are really big: they are at least as large as Stage 5 on the United Artists lot here in Hollywood. At the far end of this group of buildings, and reached by more covered and glass-enclosed walks, is the studio commissary, with its cafe, bar, executive dining-rooms and the like. If you have had any experience with England's showery climate, you will appreciate those covered walks: once in the studio, you can go through your whole day's activities without having once to think about the weather!

Another convenience which would be of real value here is the fact that near each stage is a separate lounging-room for the extras. When you have a big crowd on your set, it is very helpful to be able to send those not immediately needed in the scene to this lounging-room, where they can smoke and gossip to their hearts' content, and yet be instantly available when needed.

On those six big stages, you will find an amazing number of familiar faces. Quite aside from the many actors, directors and writers from Hollywood working at Denham while I was there, I found Johnny Boyle, Al Gilks, Jimmie Howe, Phil Tannura, Lee Garmes and Roy Clark working on adjoining stages. Bill Hornbeck, formerly Sennett's Chief Cutter, is the mainstay of Denham's technical staff. Ned Mann has charge of miniatures. And there are many more Americans in the other studios. Incidentally, the only first cameraman at Denham who was not an American was Georges Perinal, the Frenchman who filmed "Henry VIII" and "Things to Come."

This does not mean that there are no good Eng-

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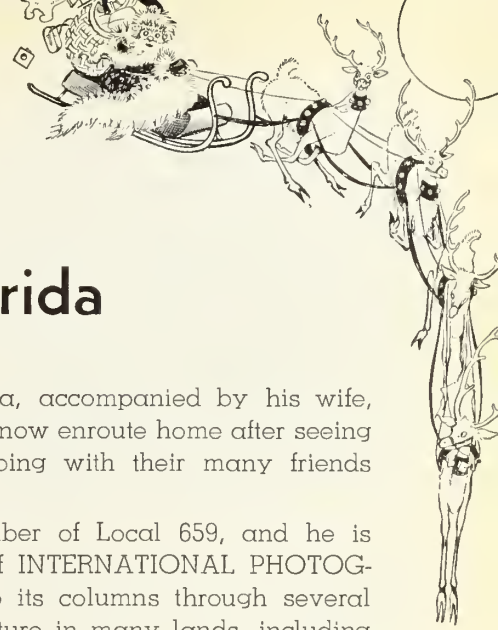
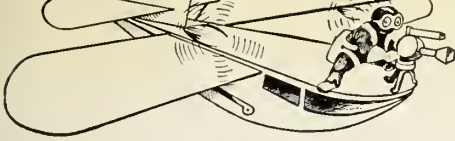
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A Messenger From Florida



Esselle Parichy, of Miami, Florida, accompanied by his wife, spent November in Hollywood and is now enroute home after seeing all the picture shows and hob-nobbing with their many friends among the cameramen.

Mr. Parichy is an old-time member of Local 659, and he is especially well known to readers of INTERNATIONAL PHOTOGRAPHER because of contributions to its columns through several years of travel and news-reel adventure in many lands, including Alaska, Canada, England, Europe, Egypt, India, South America, Central America and the ancient stamping grounds of the Mayas, Toltecs, Aztecs and the practically forgotten people of the Fourth Sub Race of the Fifth Root Race—strange to most of us.

During the last two or three years, Mr. Parichy has made a study of the Caribbean Sea and its countries and of the West Indies, particularly Haiti, and he is soon to have on the press a tale of Haitien life—the Black Magic of the Antilles.

Mr. Parichy loves Hollywood and likes cameramen, but he has the greatest confidence in the future of Florida as a home place—hurricanes or no hurricanes—"for," he declares, "a way has been found to harness the hurricane for good!"

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Is Photography Expensive?

By KARL A. BARLEBEN, JR., F.R.P.S.

Dean, New York Institute of Photography

IS photography an expensive hobby? How often does the photographic salesman hear this question? Beginners, or rather would-be beginners, in this most fascinating field are often awed by the advertisements of high-grade and expensive cameras and equipment. Who can blame them for their fears on the expense question, when their knowledge of photography is so limited? Readers of this article are undoubtedly of the brotherhood of ardent amateur photographers, and I am sure that all will agree that those whose interest in photography has only recently been aroused, should be encouraged rather than squelched. You, reader, can do your share in this matter, for you undoubtedly are asked: "Is photography expensive?" from time to time. In case even you are not convinced that photography is a most inexpensive hobby, the following is bound to be of interest, and if you will realize that expense in photography is mainly a matter of the individual, the following may give you a few additional pointers with which to combat the insidious expense question which never fails to rise in the beginner's mind.

Photography is exactly what you make it. It can be a most costly pursuit, or, on the other hand, it can cost practically nothing. It all depends upon the individual. No one will disagree with the old suggestion that the best camera the pocketbook will stand should be obtained. Yet, if a person with very limited means really wants to make pictures and create art by means of the lens, his equipment need not cost him more than one dollar for the camera! You and I may scoff at the lowly box camera with its single, slow lens—we who are used to precision cameras for which we possibly smoked, ate or went to the movies less to buy—but there is no denying that excellent photographs can be made with the cheapest of cameras.

The beginner will, in all probability, not be able to handle a more expensive and complicated instrument anyway, so why not advise him to obtain a simple, inexpensive camera to start with? The art of photography knows no price. A pictorial print in a salon cares not the manner of its origin—the finest anastigmat lens, or the cheapest disc of bottle-glass may have been used for its creation. It cares not. The judges care not. And those who see it care not—unless they happen to be enthusiasts, as many are, and want to know all the technical details. The point is, that we like and appreciate a photograph for what it tells us, for the joy it produces for us in looking at it. Those who are genuinely interested in photography feel this way about it, and don't care a hoot what sort of camera was used to produce the picture. Many a salon print, winning high honors, has been made with a cheap camera—but who cares? It's the picture that counts.

If beginners are made to understand this, they need not feel ashamed to buy and use a simple camera. Whether an artist uses the most costly sable brushes or only his fingers to paint a picture, matters not at all to those who find beauty in the result. We, who are fortunate enough to own high-grade equipment are often likely to become snobish—we look down upon the "poor devil" who must struggle along with his inferior equipment, yet, the user of such inferior equipment is often the better photographer because, being thus handicapped, he must exercise his skill and knowledge to a greater degree.

When you stop to think about it, expensive cameras offer only greater flexibility, wider latitude and the satisfaction in owning precision and finely-made mechanisms and optics. Obviously, better pictures under adverse conditions result, but we pay for the privilege. A simple lens, such as is found in the average box camera, can be made to yield a good deal of pleasure—if one knows how.

With a simple meniscus lens, rated somewhere around f:11 and a rotary shutter which half-heartedly clicks off exposures at approximately 1/25th second, one can indulge in practically every phase of general outdoor photography with keen enjoyment. Of course, one must choose a bright sunny day and pick out well-lighted areas to photograph. It is impossible to photograph horse races and similar fast-moving objects. But again, what of it? There are countless subjects well-suited for the strict limitations of the simple camera. With present-day film, which has been speeded up tremendously, even unfavorable conditions are no serious handicap. The box camera is awkward to carry about. It does not fold flat and conveniently to permit its being carried in the pocket. It is crudely made, and quickly shows signs of wear, but all in all, it is a faithful servant, and gladly does everything within its power—the trouble is that most beginners are not entirely familiar with the fundamentals of photography, hence, they expect too much for their dollar's worth of camera. But, that is not the camera's fault.



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The simple box camera has undoubtedly been the forerunner of many an expensive outfit, and like as not, was the means of educating its owner in the fine points of camera technique. The beginner who has never had a box camera doesn't know the joy of finally possessing a fine, expensive camera after having waited and saved for it for years. In our sophisticated age, the beginner is more likely to get a complicated camera right at the very start, and then swear at it, instead of by it, if successful results are not, on the first attempt, forthcoming. This IS a waste of money in such a case. If the beginner has the means to invest heavily in good equipment and selects a Contax, Rolleiflex, Linhof, Graflex, Plaubel Makina, Voigtlander "Tourist" or similar costly camera, he is wise to first learn the principles of photography before actually using his newly-acquired prize. The camera is, after all, an instrument, and must be carefully guided by the human element—it cannot itself make photographs unaided.

The beginner is advised not only to get a cheap camera to start with, as a point in his education, but also get a good book or two on photography in order to grasp the underlying principles in order to more efficiently—and economically—indulge in his hobby. Expensive cameras can come soon after, if the purse permits; then it will be a two-fold pleasure, for the jump from a cheap to expensive camera is not only pleasant, but satisfying as well.

As a matter of fact, a camera need not even be purchased in order to make good pictures. A box fitted with a pin-hole makes one of the finest cameras you'd want to use. Such a camera can be made at home, and just think—there is no focusing for sharpness, no aberrations such as are common in glass lenses and perhaps the best part of it all is the fact that the pin-hole lens can be made to alter its

focal length at will. The "lens" or pin-hole must, naturally, be carefully made. The hole should be drilled with a fine needle in a thin piece of metal, smoothed off, and finally blackened with lamp-black, for paint is very frequently so thick as to clog the "lens" or pin-hole. But there is a camera. And don't make the mistake of believing its results are poor. On the contrary, a pin-hole camera produces a wonderfully-drawn image—not wire sharp, but naturally soft, as the eye sees the scene. Disadvantages include the necessity of using a tripod, for time-exposure must be made. Pictorialists often substitute a pin-hole lens for their high-grade lens when they want a particular effect. So don't laugh too loudly at the home-made pin-hole camera.

The expenses connected with photography, aside from the purchase of the camera, depend greatly upon the judgment of the buyer in the first place. More and more photographers are coming to use the smaller sizes of films because of the economy factor. A camera, like a car or a wife, is not a matter of initial purchase, but of up-keep. An excellent camera can be had for a few dollars which takes 5x7 inch plates or films, but he who buys it with an eye to economy has false values, for that cheap camera can eat him out of house and home in a short time. True, the initial cost is negligible, but the up-keep—. So it is not to be wondered at that smaller cameras are becoming increasingly popular. Negative sizes of 1x1½, 1½x2½ and 2¼x3¼ inches are at this time in great demand. Cameras using these sizes may be had as costly or inexpensive as one wishes, but it can be seen that he who buys a better grade of camera of a small size can well afford it because the up-keep is trivial.

So an eye to up-keep is necessary when considering costs. Don't for a moment believe that the

(Turn to Page 21)



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Research For Cine Production

"THE PLAINSMAN"

By CECIL B. DE MILLE



If you should ever give any thought to the reasons for the extensive research that goes into the making of an historical film, you will come to an amazing conclusion:

Every costume, every article of furniture and every bit of architecture in the film must be absolutely accurate—so it won't be noticed!

Far from trying to show what we can do in mechanically duplicating the past on the screen, we avoid any conscious display of our efforts at authenticity. The main object is to keep the audience interested and carried along by the flow of the story. Authenticity helps the illusion of reality. But an anachronism in dress, scenery or properties will very often stand out, causing the audience to think about the error committed—instead of paying attention to the action and dialogue of the players.

And even beyond his obligation to his immediate audience, the producer has an obligation to posterity. In making an historical film, he is chronicling the past for the instruction and entertainment of an incalculable number of people who will see it in the future. And it is as much of a duty for him to make his account of the past approximately accurate, as it is for the text book historian to do so. In short, honest research and painstaking accuracy in films is demanded by all the canons of art and all the ethics of picture-making.

Research on "The Plainsman," on which I am now busy, with Gary Cooper and Jean Arthur starring Wild Bill Hickok and Calamity Jane, started six months before filming began—and is still going on. To give you some idea of the magnitude of the task of making every detail of a motion picture accurate: Jeanie Macpherson, Mrs. Ella King Adams, Joe De Yong, Dwight Franklin, Chief Thunder Bird, and Natalie Visart are just a few of the people who have worked on research for me since I decided to make this picture.

And to these writers, designers and technical experts, add the efforts of everybody on my staff—since there is no one who works for me who doesn't read and note and suggest throughout the time we are in the throes of turning out a picture.

It is true that a large part of the audience doesn't know, or care whether officers in the Union cavalry wore boots that stopped short of the knees or extended above them. But if such things are immaterial to that audience, they are not immaterial to thousands of people, including teachers and their pupils, who will see and believe this film. And they are not immaterial to us who are making the picture and want to do an honest job of it, if only for our own satisfaction.

In "The Plainsman" we condense the events of ten years in the lives of Wild Bill Hickok, Buffalo Bill Cody, Calamity Jane and others. This is necessary for dramatic unity, but the events themselves must be conscientiously presented. And to be sure that no slip is made, every costume, every set, and

every property to be seen in the picture—except for certain authentic antiques—has been made just for this picture.

There are many western sets standing in Hollywood, any of which we could have used. But we built our own—three acres of them—so that they would be absolutely in keeping with the period 1865-75. There are countless Indian costumes and properties available, but we had ours made at the Rosebud Reservation in Montana from sketches by Joe De Yong—noted artist and authority on Indian lore—in technical collaboration with Chief Thunder Bird, of the Cheyennes.

We could have deferred to such American fallacies as the belief that Horace Greeley coined the advice, "Go West, young man." Instead, we are crediting the real author, John B. Soule, editor of the Terra Haute Express, who, because he started a widely printed editorial, "Horace Greeley never gave better advice than 'Go West, young man,'" created a notion that Greeley had already given that advice.


In other words, we are trying to bring the post-bellum decade to the screen just as it was. But not to show how technically clever a production staff can be. Our only object is to make Wild Bill Hickok, Calamity Jane and the others as alive and real as possible, and get audiences engrossed in the events of the lives portrayed.

ERRATA

In article by Roy Tash, International Photographer, Nov., 1936, "Shooting at Five Past Two"—E. M. Newman Color-tours, Warner Bros., Vitaphone Release, in heading, should be eliminated as misplaced.


There should have been an underline beneath the photographs reading: Copyright 1936 NEA Service, Incorporated.

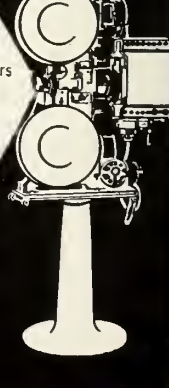
In heading, also, the name (Hon. David A. Croft, Chief Guardian of the Quintuplets), should read—CROLL—not CROFT.



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COLORFILMING IN BRITISH STUDIOS

(Continued from Page 8)

lish cameramen. There are, though not enough as yet to meet the needs of Britain's suddenly expanded production. But as England has had to revamp its producing industry so suddenly, the native cameramen have temporarily had to take a back seat to the Americans, just as we once gave precedence to cameramen from Paris, Rome and Berlin when those cities were leaders in production. And just as our native-born cameramen eventually proved themselves artists equal to the best of any other country, so, too, we will unquestionably find the British re-establishing themselves in their own studios, working side by side with the world's best.

On the set itself you will immediately see more familiar "faces"—this time inanimate ones. The equipment used in modern British studios is predominantly American. Britain has developed little in this line, aside from Cooke lenses which are as popular in Hollywood as in London. And of course the Americans have asked for—and gotten—the equipment to which they are accustomed. Our picture was shot with a Technicolor camera that had seen service on most of Hollywood's color productions; but while some of the European cinematographers favor the DeBrie, Eclair and Vinten cameras, the majority of England's films are photographed with American Mitchells, housed in Yankee blimps. The color films

are made with the four complete Technicolor outfits now in England. Most of the recording, too, is done on the latest Western Electric and RCA recorders. ..

Another familiar "face" is the "M-R" monogram on the lighting equipment. The Denham plant is completely equipped with the very latest types of Mole-Richardson lamps—18's, 24's, Rifles, Solarspot "Juniors" and all the rest of the family down to baby spots. As we were shooting Technicolor, our set was naturally rigged with Mole-Richardson "H. I. Arcs," Side Arcs and scoops, exactly as though we were in Hollywood. Denham has enough modern Mole-Richardson equipment to take care of all the companies their six stores accommodate at once, and arcs enough to meet any demand a Technicolor unit might make.

Many of these lamps came from Hollywood, but while I was over there a British Mole-Richardson factory was started, under the guidance of another familiar face—Robert Linderman. He began his firm's activities in England by assembling Hollywood-made parts into complete lamps; but now that the factory is organized, the lamps, with the exception of the essential "Morinc" lenses of the Solarspots and H. I. Arcs, are completely British-built. It is interesting to note the British custom of frequently giv-

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THE KEY TO COLOR

(From *Color the Spirit of the New Age*)

By MARY KING HUNTER

[Probably the greatest color expert in the world. Editor's Note.]

A Help Toward Color Cinematography



DARK brown vibration results in a calamitous aura.

After every great upheaval in history, we see the nations begin a new cycle of color. Grief, fear and misery has been the portion of the many. Death **black** has stalked amongst us, laying us low in the dark **brown** soil. After the World War and just almost as soon as the Armistice was signed, this depression showed signs of lifting. Black and dark brown had been the colors generally worn, expressing the attitude of the mind and heart.

White is neutral, white is a light, and white is also a clean, moral thought.

Mix **black** and **white**, in proportion two parts white to one part black and we have the mystic **grey**. Our battleships are painted grey so that they blend with the grey seas on which they operate. Mystery, a little sadness perhaps, but a general lightening of the slow, deadly vibration of the depressant black. Physical and mental exhaustion quite often accrue from continued use of black.

After the period of grey, it is always noticeable that the nations will again aspire. They use only the raw, primal colors. Passions are let loose and stalk the earth almost brazenly. We flaunt the brilliant **scarlet** and dull, coarse **orange** tones and dig deeply into the **ecru** which shows desire at its very worst.

Yellow, the Gold of Wisdom, has been soiled or dirtied by earthliness (brown).

Ochre or coffee shades will show indecision of character and just as clearly do they indicate sensual affections.

When we have both used and abused the elemental colors, we turn from them, often with loathing, "Sick of them," we will say and run through all the gamut of color in the pastel shades. Seeking, seeking, seeking, ever seeking to express ourselves though often we know it not, or knowing it, yet must be burnt before we dread the fire.

Diverging here for a few moments, let us consider the typically grey persons. We all know them. We meet them daily in every walk of life—black and white, stirred together, producing only a neutral, being merely the combination of two neutrals. The grey person, man or woman, will be found to be like a clean slate on which flashes of your wit or wisdom or mayhap flashes of mine will write itself plainly. Logical, prudent, a pacifist and a plodder, the grey person gets there, though often "a square peg in a round hole." Their little set or sets of ideas are ticketed and docketed, ready for presentation to the first likely purchaser of their services. They never scale the heights—theirs not "to do or

die." From the chaff they sift the wheat of that other person's ideas, while the temperamental genius is still scaling the heights and discarding with scorn the mediocrity which satisfies the one-track mind.

Thus we see clearly that white, though a light, is also a neutral and when alone produces only a negative effect. People who wear white for any lengthy period often become irrational, cold, or rather expressionless. People who are, as one might say, condemned to wear black incessantly, are just as unfortunate. Clerks in large stores often complain bitterly about this rule or restriction and when it is enforced to the letter no real good ever comes from it. Yet, in my travels over this great country and addressing, as I have done, many thousands of clerks, I have always made it clear to them that black is almost a necessity. They are the background (the neutral) against which is shown the colorful merchandise which they are engaged in selling. They should, when they go home, bathe and rest a few minutes, then change to a colored dress, no matter how cheap it may be, provided they vibrate to the color, and then look in the glass and see how much better looking they are. How much healthier and happier to mix and blend with the others of the home circle. Flowers will add greatly to this happy vibration or even the use of a brightly colored lampshade. Reason, real sound common-sense, has therefore been at the root of changing our dress for evening wear.

It is then clearly seen, that we all vibrate to

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color, whether we know it or not—men as well as women. The mistress of the house or home usually decorates it according to her taste and this, as we will see, might be a great mistake.

I give this suggestion to the home-maker, who would value above all things the united, harmonious home atmosphere. Do not dominate your family by your particular color-vibration. "Live and let live" can be our color slogan.

Red is the slowest and strongest vibration of all the colors and is a stimulant. Therefore, we are ever ready to accept it. Its slow, triumphal, onward marching, leaves us in no doubt as to whether we vibrate to it or not. Many characters cannot accept the emotional irritant red, yet Red is Life. And red is sex—and a red light always denotes danger. Scarlet is the "Come Hither" color of all the colors. According to our characters we will either love it or hate it. And, if used with the depressant black, it is less harmful or equally harmless as when used in combination with a dark blue or the neutral white. Many older women living in a sad-negative atmosphere will continuously wear this uninteresting dark blue or blue-grey which is almost as great a negative depressant as is the black. Hence, the term "The Blues."

The various tones of **blue** denote an optimistic character, also show steadfastness, loyalty and deep hope.

Combine blue and red (Life resplendent) into a lovely violet color, which in turn when combined with the neutral black, shows mourning (Mauve), pessimism and loss of life.

Blue refines, cools, delays, reduces and is at once electrical and a depressant. Men seeking heaven or harmony adore blue. Blue in all its shades is essentially a man's color, representing to the mind of the average man Peace, Harmony and Home. Yet, blue is cold, is truthful and calming. The higher we go into the blue the colder it becomes and so it behooves us to be careful in the choice of blue wallpaper, blue hangings or blue lampshades. Too much blue on our table has this same effect of coldness and austerity. It does not welcome unless allied with a color expressing the love and the joy of life.

Blue is a wonderful sedative to tired nerves, and **sapphire blue** always denotes a high degree of spiritual perception. Apropos of this, we speak of "honest blue eyes," "calm (or clear) blue eyes."

Turquoise blue denotes culture and is a mixture of blue and green, expressing the very highest vibration in music, art and science. Whenever any wonderful, unforgettable memory imprints itself on our consciousness, we find it so imprinted in blues and greens, deep channels in which memory flows, peacefully depicting some woodland glade or lake enclosed in its green banks, the blue skies above and the scent of the summer flowers.

Fresh **green** means to us new life and the springtime. Green is the cooling color, the great soother, mixer and blender of all the colors (the money-getting color) because it so successfully soothes, mixes and blends with every other color.

Heavy, dull, **grey-green** is indicative of laziness and of envy, and **nile green** which is yellow-brownish in tone is suspicion, mistrust and jealousy.

Either **dark brown** or **black**, as has already been shown, will muddy any clear stream of color by its inclusion in that color.

The brilliant, successful **jade** has simply been spoiled by the dark brown thought.

Yet, there are many people to whom green is a

forbidden color. To them it means simply grief, sadness, sorrow and even death. An old superstition says "Green for Grief," and such is the power of thought that people fearing ill-luck give to green an uncanny power. The nervous, highly-strung individual has no greater friend amongst the colors. A dynamic character benefits, too, from the proximity as its soothing properties are proverbial. The hard and forceful acquire peacefulness. On the slow, sleepy-minded person, however, it reacts almost as a drug and it is a great mistake to imagine that success is **always** assured from its presence in our home or as worn on our person.

The slow, heavy mentality requires enlivening, brightening—vibrations. **Light orange, rose pink** and a **greenish-blue** (aspiration, love and inspiration) a very wonderful trio. "Sleepy Hollow" is not for the business person, man or woman, of this busy workaday world, but even so, the daily use of raw green foodstuffs is not only palatable and health-giving but pleasing and soothing to the eye. The "wearing o' the green" expresses freedom, joyousness and generosity.

Young persons should have an almost all **pink** room, for the pink tones are young, happy, joyous, and loving thoughts and almost all young people respond happily to this vibration.

Pink and white together are excellent because white typifies purity and cleanliness and together with pink arouses the emotional quality of love and amiability.

A deeper shade of **rose** will be worn or used by the older woman showing constancy, reliability and personal fastidiousness.

Peach or **apricot** will often be used entirely to the exclusion of the brighter pink.

Yellow is the "Gold of Wisdom" and gold allied to pink produces peach. Thus, we will see the subconscious mind doing its share and causing the older woman who through life has been absorbing her share of wisdom (or at least let us hope so) to express herself correctly in **peach**.

Now, if we pause here and adding **blue** to this **pink** (withholding the gold) we see before us a shade which can be classified here as fuschia. This combination of color adds a little of the life of Red and the love of the rose to the idealism, the courage of the blue. The wearer of this color would always be of a decided character, but would be a humani-

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OBITUARY

The world-wide friends of Len Roos, F.R.P.S., will hear with great sorrow of the passing away of his lovely wife, who departed this life recently after several years of illness, at their home in San Fernando Valley.

Both were internationally known and the bereaved husband was one of the leading news-reelers of the world, with a wide experience in cinematography and photography in general, including its mechanics and chemistry.

Mr. Roos was absent on a professional trip when the sad news came to him in Switzerland and whence he was to proceed to India, Java the Straits Settlement and other Oriental points.

He expects to arrive, returning about December 1st. His deceased wife was laid to rest in Forest Lawn Cemetery.

HITTING THE HIGH SP

By CHL

FIND me a place," said the world's best, but most particular newsreel, "a place that is spectacularly beautiful; something different! Get me something new in the line of thrills for picture lovers and be sure that this place lends itself to the use of Infra Red film."

Now to find something new under the sun, especially something not yet filmed by a newsreel camera—is quite an order. Consider Mr. and Mrs. Public, to say nothing of most of the little Publics; who are practically satiated with thrills. Through films, they have been eye witnesses to everything from violent death to the arrival of quintuplets.

Granting that I could think up a place to qualify for this story, there was still the big problem of being sure that conditions were just right for making it on Infra film. There was one big consoling thought about the matter: Nowhere on earth did the Creator leave a better supply of natural wonders than in the Pacific Northwest. (Original idea—not stolen from the Chamber of Commerce.)

Starting at the front door, my thoughts traveled in ever-widening circles until suddenly they landed about eighty miles away as the crow flies—eighty miles away and eight thousand feet up. When you realize that Seattle is absolutely at sea level you can understand that these thoughts were quite, quite up. Here they paused loftily and a bit reluctantly. Without a shadow of a doubt, this was the place for my picture, but while the going was easy v.i.a. the imagination; there were certain problems connected with getting there laden down with a few hundred pounds of camera equipment.

Before we go into that I must tell you a little about this selected spot. I, myself, am of the opinion that it is one of the loveliest and most intriguing places in America; although it is still a white spot on the map of our continent.

The Last West, that inaccessible heart of the Olympic Peninsula, where crude foot trails find their way among glaciated peaks and there are deeply forested stretches never explored by the eyes of mankind. Mt. Olympus is the crowning point of this Magic Land, upon whose summit less than two hundred persons have trod with triumphant, not to say shaking, and weary, feet; Mt. Olympus.

This mountain with its thirty-six square miles of glacier surface, topped by a sheer rock chimney which affords neither toe nor hand holds and which is scaled by the dizzying method of throwing a rope over a jutting ledge of shale and ascending hand over hand. To lose a grip at this stage of the climb means sure death. On one side a sheer drop of two thousand feet; on the other a glaring icy wall with gaping crevasses.

Mt. Olympus is a challenge to the most experienced mountain climber. It is at its worst in August. Snow bridges are rotten, the surface drifts, which provide sort of an anchoring medium, are melted, leaving glaring ice. Water roars constantly beneath the crevasses, eating at the glacier structures. Crashing avalanches tear down the ice fields but, for Infra film, there is nothing to eclipse Mt. Olympus in August.

The glaciers are at their spectacularly-best. Great cumulus clouds sweep back and forth, cling to the

Near the top we reached a level cornice. Chimney leading to actual summit just shows—partially at the left.



Blue Glacier, tortured and crevassed. Two men reveal size of fissures.



Leaving Blue Glacier, we look up into the white—the second leg of the journey.



Photographs by Chalmer D. Sinkey.

charred peak as though undecided where to go and suddenly disappear into blue sky. There is a minimum of haze, and the view, reaching in any direction is beautiful beyond description.

You can see that the mountains checked perfectly with the requirements of my editor; it was different, it was thrilling, and it offered clear open vistas, punctuated by every type of clouds. Now for the final and last little item of consideration: Who would be willing to go along and provide some animation for the scenes?

At first, some twenty mountaineers were eager to go. Later, most of them thought better of it; on the actual take-off there were just six in the party, not counting the horse wrangler who went up to the timber line with supplies.

TS WITH INFRA RED

SINKEY



Huge ice chunks broken off, falling with reverberating roar.



Looking up Blue Glacier; the beginning roadway to the summit.



Looking up Blue Glacier to distant goal.

Photographs by Chalmer D. Sinkey.

In case your geography is hazy, The Last West lies next to the Pacific Ocean, in the northermost corner of our land. It is bounded on the east by Puget Sound, on the north by the island-dotted Straits of Juan de Fuca.

This region, marked "Olympic Peninsula," is a land of rugged, primeval forests, of roaring glacial streams and of peaks eternally covered with snow. Almost inaccessible to man, its wild grandeur is undisturbed by the march of civilization. Its cathedral-like forests of hemlock, fir, and cedar are covered by the moss of centuries, kept more than amply moistened by an annual rainfall of two hundred and fifty inches.

Eons ago, before glacial masses ground and leveled this land, its peaks are estimated to have

been twenty thousand feet high. These peaks came into being by the astounding process of pushing up from the sea.

There are really three summits on Mt. Olympus—East Peak, Middle Peak and West Peak. All are slightly more than eight thousand feet high. Because they have been visited by so few, there is still discussion about which is the actual top. West Peak is the hardest of the three to ascend, but it provides the grandest glacier vistas that I have ever seen. Far beyond the ice fields the Pacific Ocean lies, suspended from a ruffle of clouds, occasional ships appearing like toys.

Upward out of the haze, mighty steps, ranging from foothills to white, broken peaks. Here and there, reflecting the sun, an oval mountain lake; immediately below, steep ice fields blown into thousands of tiny hummocks by the never-resting wind, ice fields that separate like fingers of a gigantic hand, into the Blue Glacier and the Hoh, and the White, all taking a different course as they pursue their grinding, relentless way downward.

The fore-mentioned group of six, planned eight days to conquer this well-fortified peak. All were experienced mountaineers and more or less familiar with the Olympics, except the cameraman, who plodded along, blissfully ignorant of what each new day had to offer. One thing about Time—it lends enchantment to things that are past, otherwise, the adjectives set forth above, and those carried down the homeward trail from Mt. Olympus in the cameraman's heart, would never coincide. After all, a heart that is concerned with blistered heels, barked shins, too much ultra-violet and a general rheumatic-like ache here and there and everywhere, is poor soil for appreciation of beauty and grandeur.

In case some camera enthusiast should be inveigled into a summit climb of Mt. Olympus in August, from the above descriptions, it seems only fair to take the reader back over the trip in reminiscence, then, if he still wants to go—good luck and God's blessings to him.

An infant day is waking the small group out of deep slumber that comes after an unaccustomed dose of physical exertion. Yesterday, we traveled endless miles over roads that just missed being elk paths. It was dark when we reached the jumping off place, where civilization ends and the Olympic wilderness begins. Here we were to lock up our cars, take a last look at a telephone, say good-bye to the radio and take to the foot trails; but before all of that a hastily prepared camp supper and a night's rest.

It seems as though we just crawled into the sleeping bags, but it must be dawn, for there is Matt, the general of the group, making a great hullabaloo about flap-jacks. My face and one arm, that was left uncovered is generously spotted with small burning lumps; bites of some kind! No mosquitoes are in evidence, but wait, what are these microscopic little devils that make no noise as they attack and look for all the world like animated grains of pepper?

"No-see-ums," says Cougar Charlie, who is the horse wrangler and a positive authority on every-

(Turn to Page 24)



AMATEUR MOTION PICTURE DEPARTMENT

Your Merry Christmas Movie

By F. HAMILTON RIDDEL



IT IS none too soon, right now, in fact, to plan for your movies of Christmas celebration. At no other time of the year is there such a rich cinematic opportunity for movie makers to successfully and interestingly employ home movie cameras to good end, and to record for the years to come happy reunion of family and friends.

As the habits and customs of no two families are alike in celebrating Christmas, we will not attempt setting down in this article any strict and unvarying Christmas continuity. Rather, it seems best to merely suggest the manner of recording a holiday film, and leave the cinematic details and personal touches to the imagination of the individual movie maker. For the latter reason, again we say, it is none too soon to plan this year's Christmas film.

Like every good movie, your film should be planned into separate and distinct sequences, each a story-telling chapter which, when finally joined together, will result in a smooth record of the holiday season. And this rule-of-camera remains good, whether one decides on a simple or on an elaborate Christmas movie.

Generally speaking, the following sequences are most typical of Christmas time:

Forerunner of the Holiday Season: Appearance at neighborhood markets of truckloads of Christmas trees—Newspaper notation of the few remaining days for shopping—Outdoor Christmas trees, in front of homes, being wired and decorated—Stores with Christmas display windows—Elaborate toy displays engaging the rapt attention of all passersby, especially the children—The Salvation Army kettles and other charitable organizations with their many street "Santa Clauses"—The holiday shopping crowds, loaded down with bundles and packages—And the Santa Claus street parade, put on by the local merchants, which "kids" of all ages won't miss seeing.

The Night Before Christmas: At home. The children writing their notes to Santa—Hanging up their stockings at the fireplace—being hurried off to bed; close-upped as they fall to sleep, the joy of anticipation marked on their faces. The ensuing activity of

the grown-ups of the family—Dad bringing in and setting up the tree—Mother busying herself with final gift wrapping and filling the children's stockings—Dad struggling with the tree lights and decorations, as Mother exercises her artistic prerogative in suggesting arrangement of decorations while she busies herself arranging the gifts and toys under the tree—The final visual appraisal of the completely decorated and lighted tree, as the tired but happy grown-ups switch off the lights.

The 25th of December: Close-up of a clock face, with hands pointing near midnight—they revolve to 7:00 a. m. The children getting up from bed, their jubilant noise-making awakening their elders—the Big Moment when all the family enter the Christmas-treed room—the plunge for the presents. Expressions of happy surprise and joy as the gifts and toys are opened—a pile of gift wrapping paper, cards, ribbons and trimmings, as it mounts up and up.

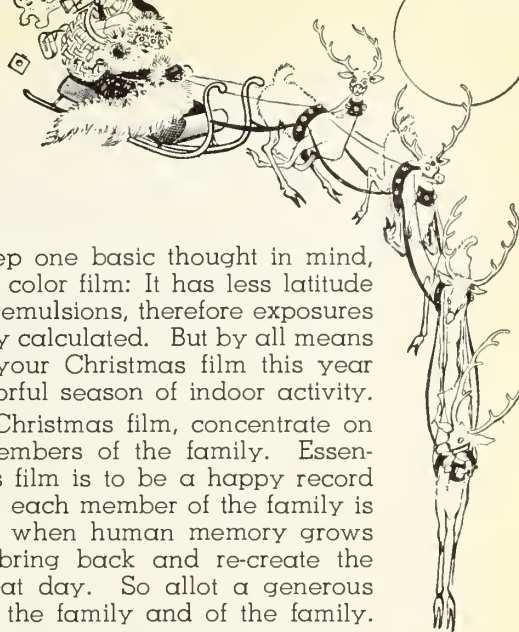
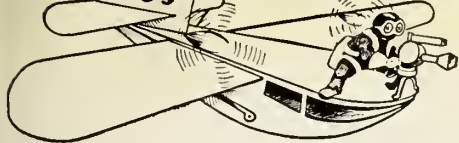
The morning calls of the children's neighborhood playmates, each with some highly prized Christmas gift; each relating to the other "what Santa brought me"—cut to the kitchen and the preparation of the Christmas dinner, etc.

The Feast: The family seated at the dinner table—Dad carving the turkey—plates being passed—and a general shot of all as the Christmas dinner is enjoyed.

After the Feast: The afternoon lull (for the grown-ups), with the children playing outside in the snow—Snowball fights—using new sleds and so forth. Friends of the family dropping in—pausing to examine the youngsters' new toys. Later, Dad monopolizing Junior's new miniature electric train set with due protest from the rightful owner!

Evening: The weary-faced but happy youngsters as they are bundled off to bed—insisting that they be allowed to take a prized gift or toy to bed for the night. Downstairs, the grown-ups chatting before a cozy fireplace—the lighted Christmas tree behind them—as we fade-out on a perfect day.

Photoflood bulbs, in proper reflectors, are of course the natural choice for making the indoor Christmas shots. Reflectors, while not absolutely necessary, nevertheless materially add to the photographic efficiency of the Photoflood bulbs, as much as three-fold, it is estimated. If you do not yet possess an interior lighting unit, you will find many satisfactory models offered at reasonable prices. Be careful not to use more than five Photofloods on a single circuit, to prevent overloading fuses. And if you are making your pictures with black and white



camera film, strive for contrast in your lighting. Do not place two lamps, for instances, equi-distant from a subject. Move one Photoflood nearer to the subject. On the other hand, if you are filming in natural color, a flat lighting effect is to be desired with this film. Natural color will add the needed contrast in the shots.

Christmas this year offers a special advantage, never before had, to every movie maker. Namely, Kodachrome Type A color camera film, especially balanced for use with Photoflood bulbs. And what's more, 8 mm. owners can now match, shot for shot, every color scene their older 16 mm. brothers may take. For Type A Kodachrome is now available in 8 mm. film also.

Unlike Kodachrome Regular when used in artificial light, Type A requires no blue filter to compensate for the redness of artificial light in comparison to daylight. Thus Type A is not only faster indoors, but it obviates the necessity of taxing the Photoflood units and house-fusing. Indoor color work becomes as simple to produce as regular black

and white films. Keep one basic thought in mind, however, when using color film: It has less latitude than black and white emulsions, therefore exposures must be more carefully calculated. But by all means try natural color in your Christmas film this year and so capture a colorful season of indoor activity.

In shooting your Christmas film, concentrate on large close-ups of members of the family. Essentially, your Christmas film is to be a happy record of a happy day when each member of the family is present. Years later, when human memory grows dim, your film will bring back and re-create the bright spots of a great day. So allot a generous amount of footage to the family and of the family.

After your film has been processed, edit it with care before giving it a general screening. Supply the titles needed and build up continuity by judicious cutting, which is the mark of the successful filmer. Then, with pride, you can indeed invite all to see your Merry Christmas Movie. And you will have a subject in your film library that never grows old.

CINEMA-TIDINGS

Amateur Motion Picture News

Bee Bee All Metal Enlarging Easel: Photographers experiencing "easel trouble" are urged by the firm of Burleigh Brooks to investigate the merits of the newly introduced Bee Bee All Metal Enlarging Easel. Easy to use, precise and substantially built, it is said this new all metal easel offers for the first time complete protection against the annoyances heretofore experienced by photographers when using easels wholly or partly made of wood. Inaccuracies formerly caused by the warping or splitting of wooden parts are, of course, entirely eliminated. Inner margins are controlled simultaneously with one lever. Extremely wide, sliding clamps offer rigid support for the 1½-inch masking bands.

Bee Bee All Metal Enlarging Easels are available in 8 by 10 inch and 11 by 14 inch sizes and are distributed by Burleigh Brooks, 127 West 42nd Street, New York City.

8mm. Gevaert: In addition to the three 16mm. reversal type film emulsions recently announced by the well-known firm of The Gevaert Company of America, Inc., 423 West 55th Street, New York City, there is also available an 8mm. camera film. Designated as Gevaert 8mm. Panchro Fine Grain Reversal, the film is supplied on standard 25-foot rolls, daylight-loading, with processing included in the purchase price.

Keystone 8mm. and 16mm.: Keystone Manufac-

turing Company, 288 A Street, of Boston, Massachusetts, is featuring among its several other 16mm. cameras, the model A-7. Keystone A-7 camera offers seven speeds, including slow motion; film register; spring lock and release; built-in exposure scale; F2.7 interchangeable lens; built-in view finder; 50 or 100 foot film capacity, either black and white or natural color pictures; and carries a one-year guarantee.

Companion to the model A-7 camera is the Keystone A-81 projector, equipped with 750-watt lamp; pilot light; adjustable angle projection; electric rewind; forward and reverse projection; large F1.65 lens; and new cooling system.

For 8mm. movies, Keystone offers the model B-8 camera, the standard model with F3.5 interchangeable lens. This model is also available with F2.7 or F1.9 lenses. The model B-8 has three speeds; direct vision view finder and an auxiliary view finder for centering difficult shots; mechanical footage meter; exposure chart; and strap handle for convenient carrying.

The Keystone 8mm. projector, model G-8, has a 200-watt lamp; adjustable tilt; motor rewind; framer; cast heavy base; large single sprocket and roller guides for easy threading. Film capacity is 200-feet of 8mm.

QUESTIONS and ANSWERS

By F. HAMILTON RIDDELL

1. Can animation work be done with Kodachrome?

Yes, it can. The procedure for natural color animation is the same as with black and white film, one exception being increased illumination that is required by Kodachrome. It is advisable, before going into detailed work, to make some preliminary exposure tests. Ascertain, in this way, the correct exposure to suit your particular requirements. Practice is also required, using 8-frame speed for animation, so that single frame exposure making becomes entirely accurate. A quick tap of the finger on the camera lever, with speed set at 8, obtains the best results.

2. How may one be sure he is not shooting on leader at the start of a roll of film?

The following test can be made, if your camera is equipped with a detachable lens: after loading the camera, remove the lens and press the exposure lever slightly. As the shutter revolves, the aperture can be watched as leader is moved along to the start of the camera film. When making this test, use 8-frame speed, as it is more convenient than normal 16.

3. Can a fade-in or fade-out be made, without a special device, on the small hand titlers?

Quite readily. With your lens set at correct exposure setting for the artificial light you are using, set the camera in motion. At the same time, gradually move your lighting unit towards its proper location on the titler—this will give you a fade-in. To make a fade-out at the end of a title, reverse the

process by slowly moving the lights away from the titler. The footage of your fades will depend on the speed with which you move your lights. This is convenient, for you may care to vary the lengths of fades.

4. What other lenses besides the F3.5 are available for the Keystone 8mm. camera?

There are the following: F2.7, 12½mm.; F1.9, 12½mm.; and the telephoto 1½-inch, F3.5. These lenses are instantly interchangeable with the standard F3.5.

5. For testing purposes, is it first necessary to make a print before running a sound on film recording?

No. The original sound negative can be run, if so desired. This film will give you a check-up on the recording made; and in case the recording is unsatisfactory, time and film are saved which otherwise would have been used in making a sound print. If the negative sound track is satisfactory, a positive should of course be made, since a positive track will give improved quality of the sound recording when screened.

6. What are the essential pieces of equipment in taking home movies?

In our opinion, there are three: a good camera; use of a standard camera film; and a photoelectric exposure meter. While it is not to be concluded that satisfactory home movies can not be obtained without the use of a photoelectric meter, the latter will overcome human errors in judging photographic light and will save film which otherwise might be incorrectly exposed. Furthermore, with the advent of color films which require accurate exposure, more so than black and white, a photocell meter will assure best results.

NOTE: As a service to amateur movie makers, we extend a cordial invitation to write in questions which will be answered in this column. Address all such letters to: Questions and Answers Column, THE INTERNATIONAL PHOTOGRAPHER, 506 Taft Building, Hollywood, California.

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"SUCCESS"

By ESTELLE M. O'NEIL

(Contributed by Les Rowley, Still-man, Local 659)

If you can hold your head up high
While "old hard luck" is passing by,
And give a smile or merry jest
Then, Brother, you are a success.

If you can hold your temper down
And never grumble, kick or frown;
And of depression make the best
Then, Brother, you are a success.

If you can smile at every friend
And know that sometime this will end;
I mean your sorrow and distress
You're on the road to sure success.

If you can eat a plate of beans
With all the grace of kings and queens
And keep your loving tenderness,
Then, Brother, you are a success.

If you can take it on the chin
And fight and fight until you win,
You'll find your way to happiness
For, Brother, you are a success.

RIGHT OFF THE REEL

By F. HAMILTON RIDDEL

Projection Lamps: The concentrated filaments of projection lamps should always be regarded as a delicate proposition, and the lamps afforded careful handling at all times. Placed on them by manufacturers, projection lamps have a rated life which is satisfactory. But sudden jars, carelessly inflicted by the operator, is sufficient enough to cause premature blow-outs. It is good practice for those amateurs who own variable resistance projectors to set the rheostat at "low" when first lighting the lamp. After the lamp has burned for a few moments, gradually step up the rheostat to the proper amperage recommended for the particular lamp you are using.

Glass Effects: Many movie makers like to experiment with special effect shots. Quite often such shots, if used judiciously, will add immensely to one's movie. A common everyday drinking glass can be pressed into service; shooting a scene through the bottom of the glass will give novelty effects. Try a shot like this sometime.

Interior Lighting Unit Connections: The present winter season brings increased use of one's interior lighting units for indoor movie making. Since it is the start of the busy season for these units, it is well to check over all electrical connections. See that all lead cables are firmly attached to plugs and sockets, leaving no loose connections, and that there are no worn-out spots in the insulated covering of the wires. A rubber type plug for your lead cable is recommended, as this plug is the one which receives the hardest handling and an ordinary bakelite type is more liable to breakage or chipping. Thorough inspection of interior lighting unit connections results in a winter-time of satisfactory, trouble-proof, use.

Titling Tests: The small titling outfits, available for many standard makes of amateur movie cameras, will give more satisfactory and uniform results if they are used with artificial light under constant control. Whatever artificial lighting is chosen, it should always be used at a constant distance from the title and from a location which will evenly distribute the light over the title. When this condition is decided upon, various exposure tests should be made, using various lens settings. After the film has been processed, choose the test which is best; make a permanent note on the titler as to the correct lens stop to use, together with the lighting used. Subsequent use of the titler under these conditions of your setup will give you uniform title exposures. Incidentally, it is advisable to keep in mind the kind of title card used. Direct titles made, on positive film, with white cards, will require less exposure than mottled type cards. Compensation for this must be based upon the type of card used in your exposure tests.

Editing Bin: Movie makers who indulge in a great deal of film editing work know how quickly individual strips of individual scenes can accumulate in the process. Quite often, these strips find their way to the floor where, until they are again spliced into continuity, they collect much dust, dirt and possible scratches. A film bin, lined with soft cloth, is a safe container for such stray film. The ends can be hung over the top of the bin for ready reference. Depositing film strips in a film bin while editing is the safest place for them, and most convenient for the film editor.

IS PHOTOGRAPHY EXPENSIVE?

(Continued from Page 11)

small-sized negatives demand a sacrifice of quality. The lenses of today, even the cheaper kinds, are of such a character that excellent, huge enlargements may be expected from them. Some years ago, a large negative was necessary in order to assure quality, but the tremendous strides that have been made in optics and the development of film in recent years have changed all that. Photographic emulsions, too, have improved remarkably, so there is not a single logical argument against the trend toward smaller sized cameras.

From the standpoint of economy, the small camera is without a peer. Not only are films for it less costly, but everything connected with it is reduced in price. Take for example lenses. A good speed lens in a short focal length can be had far more reasonably than one of longer focal length, such as would be needed for a larger camera. And there are other decided advantages. The smaller the negative area, the shorter the focal length of lens required. The shorter the focal length of the

lens, the greater the depth of field. This is of considerable importance, especially to beginners whose judgment at estimating distances is not always fully developed. One can also make more negatives than usual, because the waste is not so great. A film costing 25 cents per roll is more easily discarded due to failure than one costing 60 cents or more. Tanks and trays to develop the film need not be large, hence are less expensive than those required for larger negatives. And so it goes.

So photography is not at all expensive—unless one makes it so. Once the real understanding of photography works its way into the system and lodges there, the expense factor is forgotten. I have often seen cases of enthusiasts who deprived themselves of many things, even sufficient food, just to be able to own some particular camera they had their eyes on. It's a strange disease; much like love. It forces men to act queerly and do the most unusual and unaccountable things. But they must have that camera, and nothing can stop them—that is the attitude. Do you know that feeling?

THE KEY TO COLOR

(Continued from Page 14)

tarian and philanthropist, and this under all circumstances.

The lighter tones of this color convey to the mind the **delphinium** or **larkspur** shades—**lavender** also and a **violet** color which always goes hand-in-hand with high ideals; combining as it does **blue** and **red** it causes mixed emotions, awe and depression, pomp and vanity imbued with sadness. It is toned down or best neutralized by green.

Purple is royalty, dignity and glory, and is a color always used in religious observances and ceremonies where great honor is being paid or exaltation expressed. Lightening the purple, mauve or violet—with the neutral white, gives us the various tones of orchids, lavender or lilac.

Orchid signifies the spiritual affections and when carried to excess will prove a complete barrier to thoughts of love. In repose it is sweetness itself, is agreeable, charming and gracious to a degree—but changeable and unstable in action. If we submit orchid to heat it changes, as also to light, and is the most variable color with which we have to deal.

Lavender, with more blue in its composition, suggests gentleness, old world politeness, refinement and retirement.

Lilac is impulsive to a degree, though sweet and kind in all its moods.

Heliotrope, another offshoot of the same family, suggests aloofness, sadness and loneliness, while **violet** shows a taste for good literature, proclaiming the cultured mind.

In every instance, the addition of the neutral white, reducing a color from primal to pastel, shortens the wave length or re-action and from the use of the soft, kindly pastel colors one can only have soft, gracious re-actions.

It has already been shown that yellow, in its deeper tones, denotes wisdom, while **amber** is wit and will power. Yellow is also the sunshine color and in its lighter tones, such as **pale chrome** or **pale lemon yellow**, it is peace and serenity. Clear **golden yellow** is a most intuitive color and is very curative. Yet, there are instances when we speak of a person with a "yellow streak," meaning "not white" and symbolic in both instances.

If we descend through the willful amber tones, we go down through the less harmful **golden browns**, **rosewood** or **dogwood** shades. The heavy vibration in the brown has been lightened by the gold and in the rosewood or dogwood by the love of the rose color.

Rising from amber, a certain modicum of which is not only useful but very necessary we soar into the **flame**, the **orange** shades, the **apricot** and also the **marigold**. "The Wise Men of the East" are usually depicted against a flaming sunset of a golden-orange. Orange suggests light and heat and is cheerfully aggressive. Fire (gift of God to man) lights the earth and sky, while the star points the way to wisdom. "Upward and onward," it seems to say. "Do not tarry, do not delay." How often when we see a gorgeous sunset do we feel almost



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ART REEVES DESIGNS ORIGINAL HIGH SPEED CAMERA MOTOR

For the past two years these high speed camera motors have been rented to the studios by the Camera Supply Company. Art Reeves is the designer.

The electrical characteristics of these motors are such that the power increases as the speed increases. A motion picture camera takes more power to operate as the speed is increased. The average series motor will operate at high speeds, but as the speed of the motor increases the power output decreases.

It was, therefore, necessary to wind a motor that would do the reverse of the average motor and Art Reeves designed this new high speed motor. It was made according to his specifications by a large motor manufacturer who sold these motors to others and who are now claiming the credit for them.

impelled to bow before the glory and the splendor of its coloring. Yet, a certain dull orange color is typical of a certain class of underbred person. A half caste of any race might glory in this sordid color. Dark brown has dulled or muddled the life stream, leaving it a dull, sluggish orange or marigold shade full of unrest.

The **flaming orange** portrays ambition and pride of race and is also the most aspirational of all the colors. Orange is the clearing house of red, though many people will use orange who are without the courage to flaunt the red.

Keeping the golden rule merely means a harmonious, inspiration life, while the golden wedding coming late in life's journey would almost presuppose a well-spent life and divine guidance.

In the future and even amongst the children of this new age, color will play a much more conspicuous part in our moral education. When we use a certain color or group of colors in our interior or exterior house decorating, or display a color in a gown, or the color scheme on a table, children will know the idea or group of ideas which this color scheme seeks to convey.

Nationalities can almost be grouped. Their color vibrations show a clear index to their temperament. The Jew, Parsee, Mohammedan and Hindoo are the religious peoples of the earth and they are also the so-called "down-trodden" nations. This group will be seen to vibrate to the deeper tones of blue, the religious color, showing a temperament buoyant and hopeful. A deeper blue tone, such as **Napoleon blue**, typifies deep hope, resourcefulness and dauntlessness. The Italian and French people, also the Greek, show a preference for reds and pinks. They are the temperamentals amongst the nations. Love is their life. The wine of life—rich, deep red yet

inconstant, fickle, fluctuating between the pale shades of pink and yellow (the lighter loves) back to the triumphant reds. The British and American races, and indeed all Northern peoples, respond to the light blues. They are more austere, colder in temperament, artistic, literary and exponents of cut-door games. The cooling, soothing, calming properties of the blue shades mix and blend with their colder blood and complement their more analytical nature.

The scientists and the dreamers are also portrayed in blues and greens but the hard, forceful, materialistic amongst us will always be typified by our use of dull yellows, amber and the orange tones, symbolizing the will.

Cross-breeds of almost any nationality, with a yellow or colored race, produce the most dangerous type of character. This rule does not always hold good but it is commonly stated that these unfortunates have "the vices of both the parents and the virtues of neither," forever at war within themselves and having good impulses and bad. The saying that "blood always tells" is very clearly demonstrated here.

Respectability, honesty, trustworthiness (the grey-blues), cool, calm, solid, idealism held in leash, and against this the murky-reds, the yellowish-greens with black and dark-brown streaks. The better unexpectedly appearing but an undependable character, usually mentally lazy, little or no backbone, yet, having a wonderful opinion of their own capabilities and qualification in life.

Character is not conferred on any of us, nor is it ever achieved by the intermittent use of any color or group of colors, but daily habits can count for or against us. "Sow an act and you reap a habit." "Sow a habit and you reap a character."

AN APPRECIATION

The editor and staff take this method to extend to the following named writers the deepest and most sincere appreciation for their co-operation and service. May the spirit of Christmas be upon them and upon their homes and upon their work, and may prosperity and happiness abide with them in good old '37 and never fail to keep them and theirs in peace. Pax vobiscum.

John Alton, Charles P. Boyle, Walter Bluemel, Howard C. Brown, T. Thorne Baker, Edward O. Blackburn, Karl Barleben, Jr., F.R.P.S., Walter M. P. Baats, Frank M. Blackwell, Theodore F. Comstock, W. F. Crispinel, Robert DeKay, William Draper, George H. Elvin, Ray Fernstrom, Charles Felstead, Miss Hansena Frederickson, William Kislingbury, William Flaherty, Miss Annette Glick, Paul R. Harmer, Howard Hurd, Morgan Hill, John L. Herrmann,

Alfred S. Keller, Edward H. Kemp, Harry Lubcke, Alan Lawson, Bert Longworth, Merl LaVoy, Avenir Le Heart, John Leezer, Maj. Adrian B. Klein, M.B.E., Art Marion, Harry Mimura, Hal Mohr, Herbert C. McKay, Peter Mole, Paul R. Nelson, Eddie O'Toole, Lewis W. Physioc, Esselle Parichy, Robert Parker, John Van Pelt, Rowland S. Potter, Peter Parnell, F. Hamilton Riddel, Len Roos, Elmer C. Richardson, F. M. Steadman, H. O. Stechan, Charles Van Slycker, William Stull, Chalmers D. Sinkey, R. D. Sangster, Wm. V. Skall, Silvo del Sarto, P. C. Smethurst, Earl Theisen, Roy Tash, William Thomas, Robert Tobey, Philip Tannura, Frank W. Vail, Augustus Wolfman, Fred Westerberg, Alvin Wyckoff, Delmar Whitson, E. M. Witt, Carl Zeiss.

If any be inadvertently overlooked he, also may count himself one of this esteemed and most honorable congregation.



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HITTING THE HIGH SPOTS WITH INFRA-RED

(Continued from Page 17)

thing pertaining to the Olympics. I rub gingerly and sit up to look over the situation.

Strewn about on clumps of moss are six other sleeping bags. A couple of them are moving frantically, so I assume that the "no-see-ums" were so-cialable to everyone alike. Giant firs and hemlocks tower above the waking mountaineers. Occasional patches of sky can be seen through the maze of boughs. There is no underbrush, but myriads of tiny flowers inhabiting the mossy earth's floor. I feel as though we are in some vast cathedral, where the distant rumble of the Hoh River might be likened to a reverberating organ. The idea for the day, is to get under way and hike ten miles. Supplies are loaded onto seven horses, but the climbers elect to walk. The hardening up is essential if we are to battle Mt. Olympus.

In spite of a terrific load of bacon, eggs and hot cakes under our belt, the old hearts are light as we hit the trail. Ten miles of easy ascent sounds fairly mild; but as the hours go by the hearts take on a little weight. Mile after mile through a forest so dense that Old Sol barely filters through—trees ten feet in diameter; moss hanging in yards from their ancient limbs; roots sticking up in the path to torture unaccustomed feet; little streams that usually run full, dried to bedrock by the August heat; a suffocating, steaming warmth that none can escape and nothing to drink, but water from the rushing Hoh River, which is grey with glacial sediment.

Toward evening the forest opens into a wide valley, walled by steep timbered mountains. A cool breeze whips across from the mighty glaciers that will be our destination tomorrow. We settle gratefully for another night and, thanks to the breeze, there are no little animated peppers to jazz up the wee morning hours.

By the way, it gets to be morning sooner in the Olympics than anywhere else. We just close our eyes and draw a few breaths of satisfaction when we are awakened by the never-failing Matt, yelling, "A-hoy!"

The second day is scheduled to be harder; just eight miles of trail but rough going and decidedly **up**. We plunge into dense forests again and follow the course of the Hoh as it winds through spectacular gorges, and pauses at occasional lakes. Once when we were "taking a blow" we are startled by a wierd plaintive cry. Someone has tethered a young raccoon to a giant tree, planning to return shortly and carry it home. However, Cougar Charlie is an ex-game warden. He takes his duties seriously, even past duties—so the baby coon is liberated after a frantic wrestle with his benefactor. The cliffs are precipitous, falling from the trail with just space enough for the horses' feet. In fact if they are careless, just half a hoof-mark is left in the dust. It's amazing how these horses negotiate the trails with bunglesome packs, when men, with nothing but alpenstocks to load them down, get jittery.

The second day passes quickly. Late in the afternoon with civilization eighteen miles away, our goal suddenly looms into view. All of these hours we have been plodding upward, with no view save an occasional valley between a ridge of peaks. The trees have been getting smaller and more sparse. Our pace is quickened by the realization that soon we shall top the last barrier and have a view of

Mt. Olympus, itself. There's a fascination about anticipating this first peek, after the thousands of toiling steps. What does it matter if the goal still be weary hours away, so long as we can see it?

But no words can describe the actual thrill of the moment when it comes. Mt. Olympus is like a jewel set in an exquisite mounting of rock-pinnacles. The Blue Glacier reaches toward us, reflecting the sunlight from a million huge broken prisms of clearest ice. Green firs, at the very base of the ice fields, mingle with layers of thin cloud. It is like no other mountain that I know.

Six hearts leap with eagerness to explore the distant crags and to gaze upon the view that these crags have shared with so few human beings. Soon we are at the base of the glacier, where the last bivouac camp is laid. There is still an hour of light, but so many things to do!

All shoes must be spiked with large calks. Crampons must be fitted, for tomorrow they will be strapped over the boots when negotiating steep ice fields. Many a life has been saved by good crampons that anchored skidding feet. Alpenstocks must be sharpened, for they will dig into the ice as we balance on slanted slopes. Life-lines must be checked, for there will be many miles when we shall progress, tied in groups. Dark glasses are rounded up and grease of various types, to ward off the glaring ultra-violet. A bounteous supper is prepared, for tomorrow we shall eat lightly.

At last the final arrangement is finished. Planning to be up long before daybreak, we turn in for the third night on the trail. After eighteen miles of **up**, sleeping bags feel like beds of finest down. Mere trifles such as a rock poking into a floating rib or a root under a collarbone, are quite, quite negligible.

Eventually, the inevitable call to rise brings us out of our sleepy anesthetic. We shiver into top-clothes, respecting the good old glacier tang in the air—prospects for the summit tingling down the spine.

Matt is barking orders like a captain leading his soldiers over the top. There is a general tenseness in the air. Some time in the night a new contingent of climbers stumbled up the trail, without so much as disturbing our slumber. They are joining us to make the summit trip so the inspection of equipment has to be made all over again in their behalf.

While the dew is still reflecting stars, we are plodding upward over the moraine that borders the Blue Glacier. This moraine consists of endless piles of rock, left by the melting ice. They are not too firmly placed and many of them roll underfoot. Here is where the alpenstock first comes to the rescue. The rocks vary in size from pebbles to boulders of mammoth dimensions. Great care is taken not to start an avalanche as, once they get to rolling, countless tons change position before they stop. Two hours of this finds us ready to leave the moraine and cut across the Blue Glacier.

The glacier is badly crevassed. Even at this cold early hour, pieces of ice drop off with resounding roars. There is a rushing, hidden force of water tearing beneath the ice. Matt ties us into groups which go forward ten feet apart, in case a rotten bridge should give way. The fissures extend every few feet and are small; that is, about a foot or two across, but no one knows how deep. We place the

alpenstocks ahead and leap over them until they get so wide that leaping is impossible. Then we reconnoiter, skirting the outer edge of the ice fields, avoiding the wettest spots. Here and there, water spouts like an artesian well from solid ice. We find minute black worms covering the snow. They are actually snow-worms, heavily pigmented to withstand the strong light rays and feeding upon algae. The snow takes on a lovely pink hue in certain spots. This is caused by countless algae that inhabit it.

The safe way around is a long one. Several hours go by before we leave Blue Glacier and climb a steep ice wall that will place us onto the White. Here the crevasses are terrific. Three main fissures extend clear across the ice fields. There is but one way to get over them. We skirt the edges and climb over the rocky, shale-covered peaks, zig-zagging from side to side. All of which is painfully slow. Step by step, roped together, we pick our way, stopping at intervals to make scenes.

Sometimes the group has to be raised or lowered over a bad place. Sometimes it seems foolish to go on at all. No breath is wasted in conversation, but it seems to be the general opinion that we are out to see the top or else—

Gusts of wind rise out of nowhere, bringing cloud banks that strike misgiving into our hearts. We all know how Mt. Olympus is given to having icy summer blizzards. No living thing would care to struggle through one of them. But, the fates are kind. Clouds come and go, creating breath-taking scenes for the camera.

Close to the top conditions get worse. The ice is glaring. A false step here means an invitation to permanent refrigeration. Even roped together, no line could hold on these steep slopes with no footing. Crevasses yawn, row upon row, as far down as we can see. Muscles are not so steady, trembling with fatigue. One lad is down—he's slipped, striking terror into the whole line as he nearly jerks them all from their feet!

There's no two ways about this footing business. Either you step in the toe holds chopped by the head man or you have no foundation to stand on at all.

Here is the last snow field, almost perpendicular. We cut back and forth cautiously until it is scaled. Finally we are on a cornice. It is narrow, but level for a few feet on top. How blessed to be somewhere that is level. We are fifty feet from the top and the view is everything that we hoped it

would be—and more—Infra Red has reached the highest spot and is plenty busy recording what extends in all directions.

Now comes the cold-blooded test of the whole trip. My job is to stay fifty feet down and film the ascent of the others. After all, the top is a knife-edged ridge of shale with no space for more than two people at a time. It is an almost impossible ascent. I'm thanking my stars that I am a cameraman, not a mountaineer. After all, my job is stay with the camera and record stuff on Infra Red, not to be exploiting my nerve. Besides, I want all the nerve that I have left to get down with.

Matt goes first, without looking at the gruesome possibilities on either side—on one side a sheer drop of two thousand feet—on the other a maze of crevasses punctuating steep slopes of icy glare. Two men lie in those same crevasses, because they made one little misstep.

As the climbers crawl upward, using every possible point of contact—they run out of holds. There is a fifteen foot wall that must be scaled and not even a toe-hold. By the way they keep their faces to the wall I know that every minute of waiting for the next step is agony. This goes on for an hour perhaps, while the leader throws a rope over a jutting ledge above, pulls himself up hand over hand, and serves as anchor man while the others take turns. One by one they go, hanging between life and certain death, by one small rope.

The point is they want to reach the coveted goal. Even without the camera they would have made the trip. I tell myself that for consolation as I watch them hanging there.

The group is well picked; they all reach the top; a fitting climax for the story.

As for the cameraman. He packed up his film, rubbed a few "charlie horses" and called it a day. There again he was blissful in his ignorance. It took six hours more to get down!

Heard Between George Burns and Gracie Allen:

George: "All I want to know is why we are in a chariot with four white horses when there are hundreds of taxis available?"

Gracie: "Because, silly, four horses couldn't get into a taxi, even if they had the money!"



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"The Garden of Allah" in the Magic Vestures of Technicolor

By HERBERT ALLER

PRODUCER DAVID O. SELZNICK'S first Technicolor venture, "The Garden of Allah," based on that story written some thirty years ago by Robert Hichens, will soon be internationally released. A gigantic undertaking avoided by so many other producers, this production unquestionably justifies the phrase: "Technicolor has spoken." From the opening scene to the closing sequence the rapture of seeing nature's beauty belongs to the cinema attendant.

A refugee from a Trappist monastery, Boris Androsky, played by Charles Boyer, meets Domini Elfdén, played by Marlene Dietrich, during a fracas in a small Arabian city on the great continent of Africa. From here the screen play treatment brings these two together, marriage finally ensuing. The fear that he has not kept his vow breaks Androsky's spirit until, under torturing circumstances, he reveals the truth to his divine wife. Both then agree that Androsky shall return to the monastery, and as the conclusion, parallel to many of the operas with mythical stories, the picture comes to an end as both husband and wife embark on their endowed missions.

Boyer's role is a difficult one. To portray a man fleeing from God—a human who has renounced his fate, Boyer had to be photographed so that his maddened but pitiful eyes express his bewilderment. In contrast, his face denotes complete estrangement from the world, yet soft and tender from years of isolation in sacrilege. Through the medium of Technicolor the picturization reaches the acme of stark realism.

Dietrich is more beautiful than ever. Her clothes first white, then blue and again different, are abundant with splendor. The locale of the picture is in the Great Sahara Desert, a photographic subject that in color gives rise to indescribable beauty. During the screening of the picture it was hard to conceive that the sky of faint blue, faintly seen through the reflection of the intense sun, against the vaporous white clouds hovering above a silhouetted caravan of horses and camels, was photographed and not painted.

The sunset scenes are magnificent. Whereas we are accustomed to the white backgrounds and black shadows, "Garden of Allah" represents a transition. It is replete with sharp color schemes blended in harmonious form; for the cinemaddict it is a photographic symphony.

Producing this epochal work required careful and meticulous preparation. For the directorial position Richard Boleslawski was selected. When the script was completed conferences were held and it was definitely decided that the location should be Yuma, Arizona. That alone did not end the producer's problem. A modern city was built on the sand dunes of

Arizona, proper food had to be supplied, housing conditions were not to be secondary and hospitalization requirements were urgently considered because of the unbearable heat and blinding sandstorms. Hundreds of technicians and different units of cameramen were compelled to work under unforgettable conditions. Marlene Dietrich collapsed on one occasion. All in all, when the men boarded the train for their return to Hollywood there was passive rejoicing.

This picture really belongs to the cameraman. As one surrounded by these highly skilled, self-trained technicians (photography is a study, not a trade) I realize how obvious and ludicrous it might be to heap praise endlessly upon these men, yet to commend them for their fine work as a group under the unerring leadership of D. Howard Greene, for this photographic masterpiece, is within the realm of my license.

With Howard Greene there were second cameramen Lee Davis and Roy Clark, assistant cameramen Nelson Cordes and Thad Brooks. There was a second unit under the supervision of Wil Cline with Second Cameramen Allen Davey and Roy Musgrave and assistants John Hamilton, Robert Carney, Al Cline, Roger Mace, Fred Detmers, Peter Keane and Clarence Slifer.

The work of the still cameramen, considered by photographers as the most difficult of all cinematography, though often unimportant to the performers—yet of extreme significance to the producer, was handled by still cameramen Elliott and Alexander. Their work was exceptional and has brought praiseworthy comments from many interested "movieites."

To the Technicolor organization, I must say they have worked and earned the praise of Cinemaland. Not to be overlooked is Bob Riley, that amiable and likeable chap who devotes his time to working side by side with the cameramen of his department.

Producer Selznick has commenced producing his second Technicolor picture, entitled "A Star is Born," featuring Frederic March and Janet Gaynor. Again D. Howard Greene is supervising photography. Surrounding him is that same group of second and assistant cameramen.

Some may say that I am opinionated, others may say I guessed wrong, but whatever is said, "Garden of Allah" speaks for itself. Elegant, brilliant, adorned in exquisite taste, counterbalanced with proportion and refinement, it stands forth as painted photography. If anything can be more picturesque and still reach the multitudes, I say, let us see it. In the meantime we can pay homage to our cameramen and the Technicolor organization for this superb, sparkling and dazzling contribution to the art of motion picture photography.

COLORFILMING IN BRITISH STUDIOS

(Continued from Page 13)

ing a factory a name, rather than an easily forgotten street number. This particular plant is known as "H I Arc Works"—a name not easily forgotten by anyone who has used these excellent lamps.

Lighting itself is, of course, the same whether you do it in Hollywood or in London. But the British studios have one lighting problem that is unknown here. This is the matter of power-supply. Even in the studios, the cost of electricity is almost prohibitively expensive; so much so that many of the studios have their own Diesel-electric generating plants. Location power is even more of a problem, for there is so much red-tape involved in getting permission to tap one of the many high-tension lines that this is almost impossible. Portable gas-electric generator sets are virtually unknown. Mole-Richardson's British affiliate introduced a 300-Amp. portable plant this summer, and it has been in such constant demand that one of the firm's newest and 1200 ampere units is now on the way to help light the English countryside.

The British climate is not particularly kind to location companies. Between the proverbial fog and frequent showers and thunderstorms, most of the studios prefer to avoid locations wherever possible. Also, few property owners permit their estates, etc., to be photographed. For the same reason, "back lots" of standing sets and semi-permanently built streets are almost unknown in England. The weather ruins such sets too quickly: the sets built only a year ago for "The Ghost Goes West" have been so attacked by the weather that they are already virtually useless. It would cost nearly as much to repair them as to

build completely new sets!

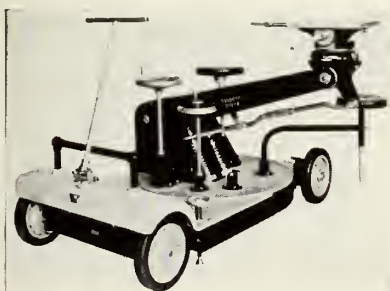
British interior sets are as well built as any you could find in Hollywood. One set I noticed particularly, which was built for a big musical film, was as fine a piece of design and construction as I have ever seen.

The chief weakness in the operation of the British studios is that their minor technicians—property-men, electricians, and the like—have not had the years of production experience that have taught their fellows in Hollywood the importance of detail. For instance, you may establish a certain prop in a sequence, and then move out of the set for a day or so. When you come back to finish the sequence, your propertyman may have completely forgotten that essential prop. If you're lucky, it will be merely mislaid; more often it is gone for good! "Grips" are virtually unknown in England, the property-man does most of the work done in America by our grip department. And the props are very independent; if your property-man doesn't feel well, he is quite likely not to come to work, and even more likely to forget to say anything about it to the studio! After all, property-men are scarce, and he is sure of a job at any other studio, so why should he worry? I can't blame the fellows, for by American standards they are badly underpaid, and I suppose that independence is about their only compensation for it.

Incidentally, the cameraman in a British studio has far heavier responsibilities than he has in Hollywood. Here, we work with a perfected organization; in England, we work virtually without it. Accord-

(Turn to Page 28)

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CHANCE FOR THE CAMERAMAN

There's a new trend in the production of outdoor features for the screen, in which action, essentially the keynote of these pictures, is being augmented with pictorial beauty.

Buck Jones, popular hero of many an outdoor thriller, is responsible for the trend.

In all his productions for Universal Studios, Jones strives to attain the utmost pictorial beauty in backgrounds and general locale.

For instance, Jones' last opus, "Empty Saddles," was filmed against the striking beauty of the San Jacinto mountains of Southern California, at mile-high altitudes.

In his current picture, Jones has taken his company into the High Sierras, 200 miles north of Hollywood, for two weeks of filming. Here in the wild, mountainous region along the north fork of the Kern River, Director Les Selander and his cameramen, Allen and Thompson and Herbert Kirkpatrick, will capture new scenic beauty for the screen.

Both cameramen are experts in outdoor photography, and with Mt. Whitney, tallest peak on the North American continent, in the background, "Sandflow" is expected to set a new high in pictorial beauty.

COLORFILMING IN BRITISH STUDIOS

(Continued from Page 27)

ingly, the Director and the Cameraman work doubly hard; many decisions which at home would either automatically be taken care of by the production department, or be handled by the assistant director,

Here, we work with an electrical crew who know lighting, and who can be of great help to the cameraman in preparing a set for his style of lighting. In England, the electricians are eager and willing, but they have not had the experience which teaches them the importance of placing lamps correctly to an inch, and focusing spotlights to a fraction of a turn. In England, you light your sets personally, rather than polishing a roughed-in lighting, as is possible here.

Another problem is the fact that England is, in spite of the many new studios and stages, cramped for stage-space. When you finish with a set, it is struck immediately. If you need it again, you must

wait your turn for a stage, and wait some more until the set is re-built, re-rigged, and re-lit. During my picture, I had finished with one set except for a single dolly-shot, which was all lit and ready to go when dinner-time came. An hour's work and we'd have been through. But it was dinner-time! The matter was put up to the crew, who voted in favor of eating. We ate. The set had to be struck so another company could use the stage in the morning—and not until over a week later could we make that one remaining dolly-shot!

From this, you can readily guess that working-hours and especially night work are not what they are in Hollywood. Of course, if you have night scenes to make, your company works at night; but otherwise (though some of the American directors are trying to change the habit) British troupes keep legitimate business-men's hours. And they are defin-

(Turn to Page 30)

"PHOTOGRAPHY YEAR BOOK-1936-1937"

(Cameramen of Hollywood may look over this remarkable book by calling at the office of International Photographer, Suite 506, Taft Building, Hollywood Blvd., at Vine St., Hollywood.)

(The International Annual of Camera Art)

Edited by T. Korda, Editor "Photography."

Associate Editor: Leonard J. Coulter.

Publishers: The Cosmopolitan Press, Ltd., 48 Fetter Lane, London, E. C. 4. publishers of the monthly "Photography."

Price: 21s. post free. Stiff covers (linen faced).

Comprises 464 pages (12" by 9½") and includes more than 1,000 pictures (108 full-page size).

Total number of contributors exceeds 550.

Pictorial Section

(Full page illustrations) occupies 111 pages and includes 108 photographs, representing outstanding work by master-photographers in many countries.

Sub-Sections

(In this year's edition, for the first time, the photographs have been grouped together under subject headings, all animal pictures, for example, being presented in one self-contained section, and so on throughout the book.)

Architecture, Construction: 70 illustrations.

Fashion, Beauty: 37 illustrations.

Hands: 11 illustrations.

Nudes: 53 illustrations.

Sea, Water, Snow: 55 illustrations.

Work: 41 illustrations.

Scientific: 34 illustrations.

Photo Murals: 5 illustrations.

Display Material: 23 illustrations.

Animals, Birds: 51 illustrations.

Babies, Children: 61 illustrations.

Flowers, Fruit: 44 illustrations.

Landscape, Outdoor: 50 illustrations.

Portraits: 107 illustrations.

Still Life: 41 illustrations.

Trick Photography: 56 illustrations.

Bas Reliefs: 4 illustrations.

Photo-Posters: 96 illustrations.

Printed Salesmanship: 13 illustrations.

Book Jackets: 8 illustrations.

Amateurs' Progress: 17 illustrations.

Magazine and Newspaper Covers: 7 illustration.

The Camera in Advertising: 59 illustrations.

Total Illustrations: 1,063

World-famous photographers from most countries have submitted some of their best work for reproduction in the current edition of Photography Year Book.

Not only will professionals find the book valuable as a guide to the trend of camera art; amateurs will discover in it a host of new ideas for lighting, composition and technique.

This year's Photography Year Book makes history in one important respect. Side by side with the work of recognized masters, it reproduces outstanding examples of amateur photography. Every owner of a camera who has ambitions to progress in the art, will find the book an incentive to better work.

Published at one guinea net, post free, the Year Book includes pictures dealing with every conceivable subject.

Of especial interest, as denoting a new trend in photography, is the section entitled "Hands." Psychologists say that human character is displayed as clearly in a person's hands as in his or her face. As a result, there is a growing demand for what is called hand-portraiture, of which 11 first-class examples are reproduced in the Year Book.

Another new note is struck by the chapter headed "Work." A study of the 41 photographs in this category shows once again the truth in the old saying that one half of the world knows not how the other half lives.

The interest in this fascinating picture book is not, however, limited to photographers. Every woman will be absorbed by the section containing 61 beautiful illustrations of babies and children. There are some infants smiling, others yelling; some playing, some eating, some blonde, some dark and some quite bald!

Keen gardeners will find plenty to interest them in the 44 pictures of flowers and fruit which appear in the Photography Year Book. The way in which the camera, when used by an expert, can capture the delicate texture of petal and leaf must be seen to be believed.

This age of beauty and beautification is reflected in the chapter on Beauty and Fashion. Here, photographers from all over the world give their idea of beauty.

Advertisers will find the Year Book especially valuable, for it shows how big business houses here and overseas have used the camera in marketing and selling. There are thousands of new ideas tucked away; for example, in the category of Applied Photography.

Students will be interested particularly in the special section devoted to the use of Advertising in Science.

The Year Book is thoroughly international in scope, contributions having been received from Britain, America, Australia, Japan, South Africa, France, Germany, Poland, Finland, Norway, Denmark, Hungary, Austria, Spain, Belgium, Holland, Italy, Russia, India, Czechoslovakia, etc.

An alphabetical index to contributors is provided.

Everyone interested in photography and attracted by beauty and artistic effort, should possess the Photography Year Book, 1936-37. Those whose friends or relations take an especial interest in camera-craft will find the Year Book a particularly welcome gift for Christmas.

The Year Book is obtainable direct from the publishers, Cosmopolitan Press, Ltd., 48 Fetter Lane, London, E. C. 4. price 21s. post free, or can be ordered through all booksellers, bookstalls, or photographic dealers.

"The Photography Year Book-1936-37," that wonderful "Bilder" book of the photographic world is so intriguing this year that the INTERNATIONAL PHOTOGRAPHER is moved to say to the editors and artists: "Well done, good and faithful servants; you are entitled to write your own ticket of praise and appreciation."

BY REQUEST

EASTMAN'S new book, *Motion Picture Laboratory Practice and Characteristics of Eastman Motion Picture Films*, was published in response to numerous requests from within the industry. It is the latest authority on its subject . . . a modern, complete handbook for all those concerned with the use and processing of motion picture film. It is printed on fine paper, has 210 pages and 84 illustrations, and is handsomely, durably bound. Price, \$2.50. Eastman Kodak Company, Rochester, N. Y.

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COLORFILMING IN BRITISH STUDIOS

(Continued from Page 28)

itely British business-men's hours — interrupted promptly at ten in the morning and four in the afternoon for that time-honored British institution, tea. Lunch is called with clock-like regularity, too. But the amazing thing is tea! Everyone on the set contributes to a tea fund, and at the appointed hour, everything stops for fifteen minutes while the troupe drinks tea and nibbles cookies, brought from the commissary by the property-man. Though the idea seems surprising at first, you soon learn to appreciate it, for it makes a very refreshing pause in the day's grind. And after drinking the British version of coffee, I can see why John Bull takes tea for breakfast! I count as one of my more important achievements the fact that, with Johnny Boyle and some of the others, I finally persuaded the Denham commissary to serve real American coffee!

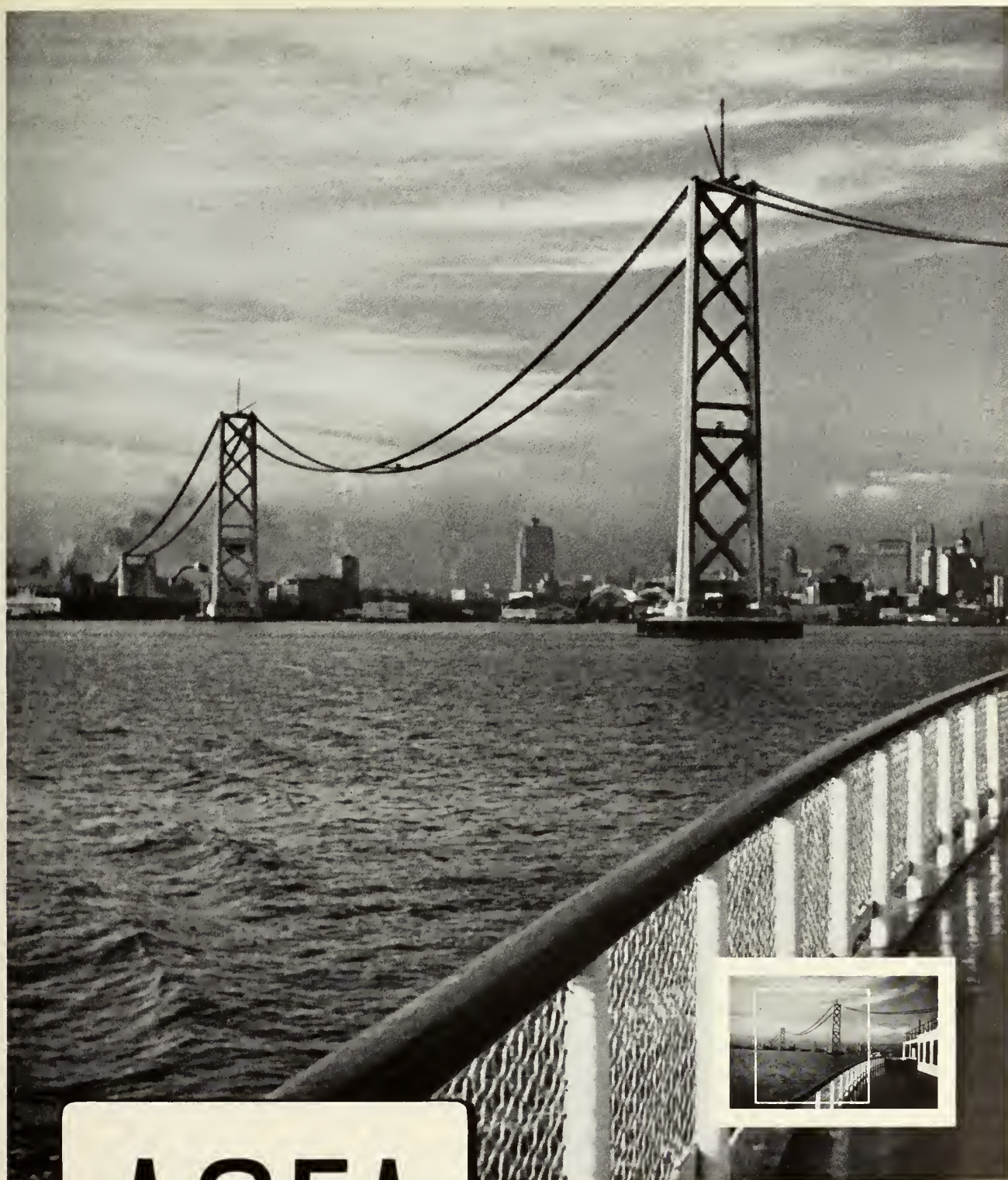
But despite these distinctly minor faults, the British studios are not only a very pleasant place in which to make pictures, but a place where you can make **good** pictures. It is amazing to see the fine new and completely equipped British studios of today, and to realize that only a few years ago their studios were small, badly equipped, and dedicated only to the production of cheap "quota pictures"—films even a poverty-row "quickie" producer would have been ashamed of. The really representative British pictures of today are such as any of our own major studios might be proud of. It is true that the quota picture still exists, but it is improving and vanishing. It is also true that no British studio has yet developed the specialized production organization one finds in Hollywood's studios, but it took Hollywood many years to build up its own organization, and not even England's tremendous enthusiasm can build up such an organization overnight. It will come; it is on its way. Meantime, the cooperation between Hollywood and London, as evidenced by the innumerable Hollywood-trained artists and technicians now making British pictures, and the founding of British branches by such firms as Mole-Richardson, Technicolor, and others, is not only helping British films, but cementing international ties that will be of lasting value to both countries.

WITH COMPLIMENTS OF THE SEASON

It is with the deepest sense of friendliness and gratitude that the staff and publishers of INTERNATIONAL PHOTOGRAPHER acknowledge the support of our publication through its advertising columns during the past year and we feel sure that the returns to our advertisers during the ensuing year will prove to be far beyond those of 1936.

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HOLLYWOOD OFF STAGE

By EARL THEISEN

Associate Editor, International Photographer

The unsung hero of the motion pictures is the "grip." He is a jack-of-all-trades, who gets his rather odd name from the old cry of the gang-boss: "Hey, get a grip on this." The badge of his trade is a hammer which he carries suspended in a loop in his overalls.

George Burns was on his way to Paramount Studios when his car was smashed from the rear. The driver of the car that hit him turned out to be a badly frightened young fellow who had borrowed the car from a friend to look for work. George gave him a check.

The script of "College Holiday" called for a kissing scene under water and it was up to Marsha Hunt and Leif Erikson to dive into a pool twenty-four feet in diameter for the kiss. It took 40,000 gallons of distilled water, pre-heated, for the kiss setting.

About fan letters! Shirley Temple received the following letter from a little girl in Detroit:

"Dear Shirley: Thank you so much for sending your pitcher to my girl friend. She has give me one-half interest in it. I gave her one-half interest in my baby sister for it. "Your truly."

And Edward Everett Horton received one from a woman in a small Midwest town in which the woman asked for enough money to build a sleeping porch on her house for the baby expected in December. She is going to name the baby Edward Everett Horton, if it's a boy.

"If you can't send the money, send a carpenter to do the work," she suggested.

A modest demand came to E. E. Horton from a chap in the Ozarks:

"I need some of your excess lumber (Eddie had just completed a house) for a shack and enough money, say \$200, to meet expenses for a year of writing. In return for this I will promise to dedicate my book to you."

Jack Oakie receives numerous letters from mothers, such as:

"My son looks just like you . . . would you care to advance enough money to send him to college?"

Instead of money Oakie sends the mothers notes sympathizing with them on their bad fortune.

Racketeering fan clubs have been organized. Promoters of these clubs ask the approval of a player to indorse the club, then the promoter sells mem-clubs have about 1,000 members, the promoter gets

about \$100 for each movie celebrity that indorses his club. The club members buy official photos, subscribe to a club magazine and other little come-alongs. One promoter in Chicago is doing a flourishing business.

Of course there are legitimate clubs. Shirley Temple has 384 with a combined membership of 3,800,000. In foreign countries there are 489 Temple clubs with a total estimated membership of over 5,000,000. An international fan club is conducted by the movie magazine "Screen Play," called "The Templers." Mickey Mouse has as many fan clubs as he has fans, I believe.

The elephant used in Paramount's "Arizona Mahoney" during the first twenty days of production of this film ate 240 quarts of peanuts. That was more than 2,500 sacks such as are sold on the circus grounds.

Marsha Hunt will not sign an autograph book unless the fan knows her name and the most recent film in which she appeared.

Martha Raye was born in a dressing room.

For the first time educational sequences of a dramatic movie were made into an educational film for use in schools. The picture which shows the development of the plains regions of North America was scripted and directed by Herbert Moulton and Ralph Jester from scenes in De Mille's "The Plainsman." The film will be sold to schools by the Bell & Howell Company.

Lily Pons has a vocal stand-in who has a voice of similar pitch and volume. The stand-in saves the wear and tear on the Pons voice during rehearsal.

Eleanore Whitney got lost in a studio-made fog in one of the sound stages. The artificial fog had been made so dense she could not find her way out of the maze and equipment of the sound stage.

Because the extras appearing in "Parnell" got blackberry pie in their whiskers one day at lunch at M. G. M., such pie was taken off the menu at the studio commissary.

Groucho Marx, who has been thinking of buying a home, has found a house he wants in one part of the city and a lot he wants that is in another. Now he is pondering over the problem of getting them together.

Robert Taylor receives over 9,000 letters and postcards each week.

Real ice does not photograph like ice, so for the skating scenes in the Fox picture, "One in a Million," Sonja Henie skated on frozen skim milk. Even that did not work satisfactorily, so a solution of calcium was used. For most ice scenes a hypo solution is poured out which crystallizes into a hard ice-like surface.

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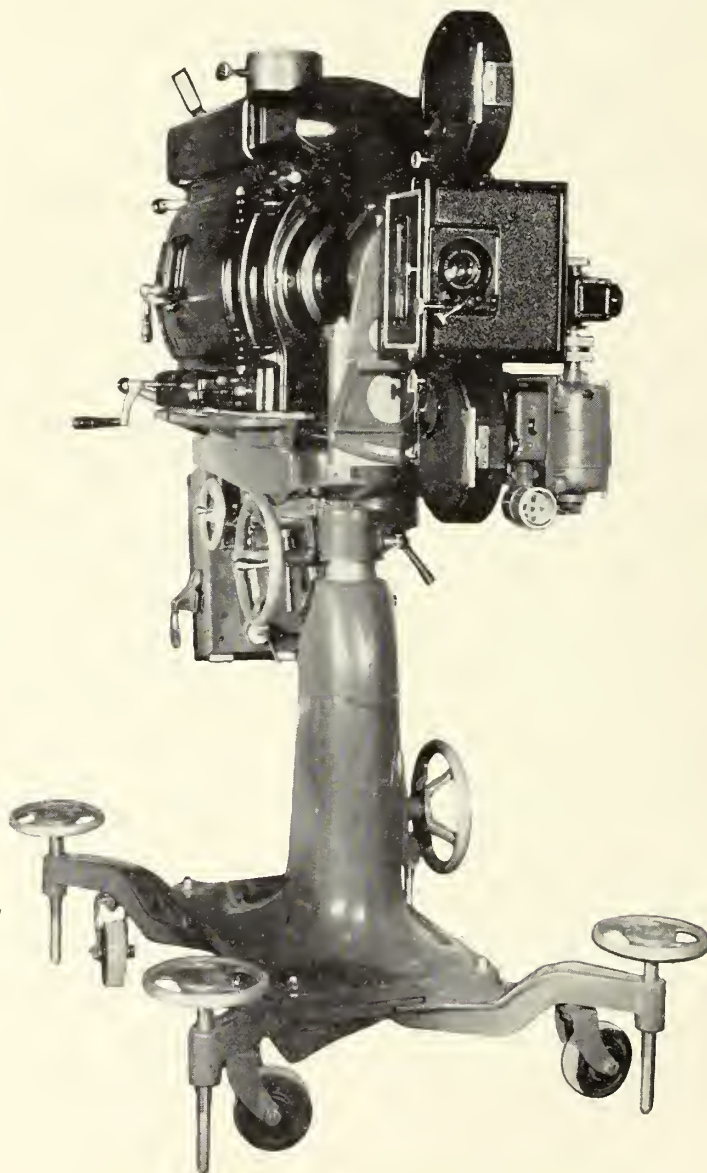
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